



**REPORT
OF
THE WORKING GROUP
ON
METROPOLITAN TRANSPORT
SERVICES**

सत्यमेव जयते

**GOVERNMENT OF INDIA
PLANNING COMMISSION**

September 1970



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INTRODUCTION

The Working Group on Metropolitan Transport Services was set up by the Planning Commission at the suggestion of the Prime Minister in March, 1970. In order to make life of the workers and middle classes in urban areas a little easier the Prime Minister had indicated that it was necessary to evolve urgently an integrated approach to the problems of public transport and that a time-bound programme should be drawn up to improve public transport services in metropolitan cities. It was desired that the study for the present be confined to metropolitan cities, such as Calcutta, Bombay, Delhi and Madras where the problem was most acute and should cover such matters as:

- (i) Increase in production of public transport vehicles coupled with reduction in prices;
- (ii) Pattern of taxation of passenger services in urban areas;
- (iii) Provision of adequate finance for augmentation of transport facilities; and
- (iv) Improvement in operational efficiency of metropolitan transport undertakings including improvements in suburban train services.

The constitution of the Working Group is as follows:

1. Shri G. C. Baveja.
Joint Secretary,
Planning Commission. Chairman
2. Shri K. K. Nambiar,
(Formerly Chief Engineer)
P. W. D., Madras. Member

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|---|--------|
| 3. Shri K. A. Khan,
Divisional Manager,
Indian Tourism Development
Corpn., Ltd., | Member |
| 4. Shri R. V. Subrahmanian,
Joint Secretary,
Ministry of Industrial Development. | „ |
| 5. Shri T. V. Joseph,
Director,
Metropolitan Transport Projects,
Railway Board. | „ |
| 6. Shri G. H. Lalvani,
General Manager,
Bombay Electric Supply & Transport
Undertaking. | „ |
| 7. Shri Rajinder Singh,
General Manager,
Delhi Transport Undertaking. | „ |
| 8. Shri P. M. Belliappa,
Director,
State Transport Department,
Government of Tamil Nadu. | „ |
| 9. Shri B. Mukhopadhyay,
General Manager,
Calcutta State Transport Corporation. | „ |
| 10. Shri A. K. Datta,
Administrator,
Calcutta Tramways Company Ltd. | „ |
| 11. Shri J. H. Shukla,
Transport Manager,
Ahmedabad Municipal Transport Service. | „ |

(iii)

12. Shri K. C. Joshi,
Deputy Secretary,
Ministry of Shipping & Transport. Member
13. Shri S. Sundaresan,
Deputy Secretary,
Ministry of Finance. „
14. Shri J. N. Gupta,
Executive Officer,
Association of the State,
Road Transport Undertakings. „
15. Shri R. B. Mathur,
Transport Specialist,
Transport Division,
Planning Commission. „
16. Shri S. B. Saharya,
Secretary,
Metropolitan Transport Team,
Planning Commission. Secretary

The Working Group was required to complete its report within a very limited time. The Group has, therefore, confined its recommendations only to some of the urgent problems facing the Metropolitan Transport Services. The Transport problem in Metropolitan Cities is becoming acute day by day. The Group, therefore, hopes that all possible efforts will be made by the concerned authorities to implement the recommendations contained in the report.

The first meeting of the Working Group was held on the 30th March, 1970. Thereafter, six more meetings were held. The Working Group also met the representatives of the leading chassis manufacturers

viz., the Ashok Leyland, TELCO, Premier Automobiles and the Hindustan Motors at New Delhi to discuss their manufacturing programme. This was followed by visits to the factories of M/s Ashok Leyland at Madras and the TELCO at Poona.

The Working Group gratefully acknowledges the cooperation received from the chassis manufacturers, the City Transport Undertakings and the Railways. We are also grateful to the Metropolitan Transport Team set up by the Planning Commission. Since its inception in September 1965, the Team has been engaged in the study of transport problems in metropolitan cities and has in its reports discussed the working of mass transportation systems in Calcutta and Bombay. For the purpose of this report, we have also drawn upon the studies of the Metropolitan Transport Team after up-dating the relevant information. Our thanks are particularly due to Shri S. B. Saharya, Secretary of the Group and Shri M. S. Mittal, Research Officer and other staff of the Metropolitan Transport Team who have helped in completing this report in a limited period. They had to put in laborious work in compiling and analysing the necessary data and in assisting the Chairman of the Group in drafting the report:

CHAPTER I

METROPOLITAN GROWTH AND TRANSPORTATION PROBLEMS

Metropolitan Growth

IN India, there has been significant increase in the urban population, particularly after Independence. According to 1961 Census, about 79 million or 18 per cent of the total population was urban. About 20 million people or one fourth of the entire urban population were concentrated in 12 cities with a population of 500,000 or more viz., Calcutta, Bombay, Delhi, Madras, Hyderabad, Ahmedabad, Bangalore, Kanpur, Poona, Lucknow, Nagpur and Agia.

1.2 The following table indicates that while the urban population of India as a whole recorded an increase of about 136 per cent in the thirty year period (1931-61), the population increase of the four metropolitan cities of Calcutta, Bombay, Delhi and Madras was 206 per cent during the same period. Greater Bombay more than trebled its population since 1931. Particularly, the rise in population of Delhi has been phenomenal recording an increase of more than 400 per cent. The population of Calcutta and Madras also more than doubled in the thirty year period.

TABLE I

(Figures in lakhs)

City	1931	1941	1951	1961	Per cent increase
					1931-61
Greater Bombay	12.7	16.9	29.7	41.5	227.44
Calcutta	12.2	21.7	26.9	29.3	139.72
Delhi	4.5	6.9	14.4	23.6	427.74
Madras	7.1	8.6	14.2	17.3	142.49
Total of four cities	36.5	54.1	85.2	111.7	206.03
Total urban population	334.6	441.5	624.4	789.4	135.94

SOURCE: Census of India, 1961.

1.3 The living conditions in these metropolitan cities have become increasingly difficult as a result of growing concentration of population and economic activities. The population density in Calcutta city is as high as 28,759 persons per sq. km. Though Greater Bombay and Delhi have on an average density of 9,597 and 7,314 persons per sq. km. respectively, 60 per cent of Greater Bombay's population is concentrated in the Island city measuring about 68 sq. kms. In Delhi 60 per cent of its population is concentrated in an area of less than 18 sq. kms.

1.4 The economic activities in the metropolitan cities are concentrated in even much smaller areas. While the number of workers has kept pace with the growth of population, the Central Business Districts have not significantly increased in area. Table 2 indicates an upward trend in the number of workers specially in the secondary and tertiary sectors of the economy during the last three decades.

TABLE 2

City	Year	Workers	Primary	Secondary	Tertiary
Greater Bombay	1931	598,920	11,679	179,151	408,090
	1951	1,353,867	18,698	530,056	805,113
	1961	1,686,668	31,920	733,478	912,270
Calcutta	1931	586,226	4,502	95,298	486,426
	1951	1,156,376	7,104	278,074	871,198
	1961	1,182,789	3,216	345,054	834,519
Delhi	1931	181,773	10,923	51,792	119,158
	1951	515,191	3,915	150,840	360,436
	1961	746,815	11,866	200,323	534,626
Madras	1931	338,449	11,326	51,015	276,108
	1951	436,100	11,739	116,577	307,784
	1961	526,981	7,462	161,592	354,927

SOURCE: Census of India, 1961.

1.5. The net result of this phenomenal increase in population and working force is that they have placed an increasing demand on traffic and mass transportation system. The traffic and transportation problems of metropolitan cities, therefore,

need particular attention. The entire metropolitan transportation network is a terminal system that collects and distributes intra-city and inter-city traffic. The functions of an urban circulation system thus are much more important because of the volume of traffic it has to cater to. Peak hour rush connected with journey-to-work and traffic jams on the roads are the most critical problems faced in Calcutta, Bombay, Delhi and Madras today. Traffic studies conducted in these metropolitan cities indicate that between 45 to 50 per cent of the total daily passenger trips were performed during the peak hours of the day, about 60 to 70 per cent of which were for journey-to-work and back.

1.6 Such acute 'peak' traffic conditions are caused by the concentration of large employment centres improperly located in relation to residential areas, coupled with increasing distances between work places and dwellings which has brought about the rush of commuter to and from the core area of the city. Unplanned land-uses and their spatial arrangements are basic causal factors in generating acute traffic conditions.

Public Transport Facilities

1.7 At present the predominant forms of mechanised transport available for the residents of these four metropolitan cities are the buses, suburban trains and trams (in Calcutta only). The number of passengers carried daily by different modes of public transport in Calcutta and Bombay for the years 1961-62 to 1969-70 are given in Table 3.

TABLE 3

(In thousands)

Year	CALCUTTA				BOMBAY		
	Trains	Buses*	Trams	Total	Trains	Buses	Total
1961-62	593 (20·3)	1300 (44·4)	1034 (35·3)	2927	1438 (47·4)	1593 (52·6)	3031
1962-63	620 (20·2)	1400 (45·7)	1044 (34·1)	3064	1530 (45·8)	1809 (54·2)	3339
1963-64	637 (20·8)	1351 (44·1)	1075 (35·1)	3063	1726 (49·2)	1785 (50·8)	3511
1964-65	679 (22·4)	1341 (44·4)	1003 (33·2)	3023	1865 (49·4)	1911 (50·6)	3776
1965-66	692 (25·1)	1090 (39·4)	982 (35·5)	2764	1989 (51·9)	1841 (48·1)	3830

(in thousands)

Year	CALCUTTA				BOMBAY		
	Trains	Buses*	Trams	Total	Trains	Buses	Total
1966-67	700 (25.2)	1091 (39.3)	987 (35.5)	2778	2135 (54.6)	1774 (45.4)	3909
1967-68	700 (26.4)	1075 (40.6)	874 (33.0)	2649	2178 (54.6)	1813 (45.4)	3991
1968-69	752 (27.7)	1080 (39.7)	886 (32.6)	2718	2094 (50.8)	2029 (49.2)	4123
1969-70	744 (30.7)	950 (39.3)	727 (30.0)	2421	2224 (50.3)	2200 (49.7)	4424

*Does not include passengers carried by private operators which are estimated at 6 lakhs per day.

NOTE : Figures in brackets show percentages.

1.8 In Madras the suburban train services and the buses daily carried about 2.4 lakh and 10.4 lakh passengers respectively during 1969-70. In Delhi the buses are the only means of public transport. On an average 8 lakh passengers were being carried daily by D.T.U. buses during 1969-70. In addition about 2 lakh passengers are being carried by private buses plying under D.T.U. operation. Besides about 30,000 passengers are being carried by 59 private buses licensed by State Transport Authority in the municipal area of Delhi.

1.9 The mass transport services provided by the electrified suburban trains in Bombay are inadequate in capacity to cater to the volume of passengers. During the peak hours, the suburban trains are packed to 'crush load'. Even the conditions in Calcutta and Madras are not satisfactory. The location of the suburban terminals, particularly in Calcutta and Bombay, is such that the majority of passengers have to depend on road transport for completing their journey to destination in the C.B.D. with the result that an additional burden is imposed on road traffic. With rapid development of suburban areas, rail traffic is expected to increase substantially.

1.10 In the suburban development of the cities, buses have assumed greater importance because of their route flexibility. At present the Bombay Electric Supply & Transport Undertaking, the Calcutta State Transport Corporation, the Tamil Nadu State

Transport Department and the Delhi Transport Undertaking have been providing mass road transport facilities in the respective cities. However, these Undertakings have not been able to cope with the increasing volume of passengers for providing comfortable and convenient travel at time and places of major demand because they could not augment their capacities. Moreover, the existing fleet consists of a large number of over-age and uneconomic-to-repair buses. Consequently, long queues at bus stops, crowded buses and excessive travel time due to traffic congestion are common features in these metropolitan cities.

1.11 The average speed with which the bus moves in the C.B.D. is about 15 kms. per hour. The root cause of traffic congestion is that much of the inherited road network in these cities with narrow widths and frequent intersections has become obsolete in design and capacity to satisfactorily cater to the demands placed upon them by the present volume and type of vehicles. In Bombay and Calcutta the ratio of the road area to the total area of the city is less than 12 per cent as compared to 23 per cent in London, and 25 per cent in Paris. Apart from inadequate capacity, another undesirable feature is that the city roads in these metropolitan centres are not only used as thoroughfares but also for providing access to abutting buildings.

1.12 Parking of vehicles and loading and unloading operations along the kerbs usurp valuable road pavement and reduce street capacity. None of the four cities has adequate provision for off-street parking facilities in the central areas. There is also the problem of encroachment on foot-paths along the roads by hawkers and pedlars which results in the pedestrians cluttering up the carriageways especially during peak hours. Bicycles, animal-drawn vehicles and handcarts further aggravate the congestion and chaos on the roads. Consequently, mass transportation vehicles are restricted from performing their assignment satisfactorily.

1.13 The traffic congestion apart from causing delays in the movement of passengers and freight, increases wear and tear of vehicles and fuel consumption, in addition to man-hours lost. It is largely responsible for increase in accidents in these cities, and greater expenditure on police supervision and other administrative services rendered. Improperly sited residential areas in relationship to major employment centres on the other hand, give rise to very little off-peak travel and the peak load vehicles return practically empty, imposing an additional burden on the undertakings.

1.14 In order to provide efficient and convenient transport facilities to the passengers it is necessary to draw up a time bound programme to improve the services of the city road transport undertakings. In this connection the right approach is to identify the problems faced by them individually as well as collectively. In the next four chapters, the working of the individual road transport undertakings in the cities of Calcutta, Bombay, Delhi and Madras has been analysed. The major problems faced by all the four road transport undertakings in the metropolitan cities are highlighted and a time-bound programme drawn up for their improvements in the subsequent chapters. The next two chapters deal with the Calcutta Tramways and Suburban train services.



CHAPTER II

CALCUTTA STATE TRANSPORT CORPORATION

THE bus system in Calcutta is primarily managed by the State Transport Corporation which was set up in June 1960. Between 1960 and 1964 the CSTC enjoyed exclusive privilege of running a nationalised transport service. Between 1964 and 1967 it had the virtual monopoly of all intra-city routes. To meet the city's growing demand for transport services, the CSTC had increased its fleet to 1093 (as on March 31, 1970) from its initial fleet of 670. In spite of the large increase in fleet, the number of effective buses on road on an average was 561 during 1969-70. This was mainly due to a number of overage buses in the fleet and frequent breakdowns.

2.2 The city's principal bus lines run from the outlying areas to the Central Business District. Many lines routed to the C.B.D. go to Howrah Station via the Howrah Bridge in order to meet the demand of trans-river traffic. At present, the CSTC operates on 29 routes, covering a distance of about 410 kms. The daily average number of passengers has gradually declined from 10.9 lakhs in 1966-67 to 9.5 lakhs in 1969-70. As the CSTC could not meet the growing demand of intra-city travel, private bus operators were granted special permits in November 1966 to ply buses in Calcutta. At present about 300 private buses operate exclusively within the city. Another 300 buses have been permitted to extend their suburban routes in the C.B.D. In all they carry about 6 lakh passengers per day.

Fleet Growth

2.3 The fleet has grown from 813 (574 single deck and 239 double-deck) buses to 1093 (718 single deck and 375 double deck) buses during the period 1961-62 to 1969-70 showing an increase of 34 per cent. The growth of the fleet from 1961-62 to 1969-70 is given in Table 1.

TABLE 1

Year	Single Decker	Double Decker	Total
1961-62	574	239	813
1962-63	580	287	867

Year	Single Decker	Double Decker	Total
1963-64	581	306	887
1964-65	609	307	916
1965-66	747	323	1070
1966-67	757	347	1104
1967-68	757	349	1106
1968-69	765	366	1131
1969-70	718	375	1093

Passenger Growth

2.4 The growth of bus passengers during the period 1961-62 to 1969-70 is given in Table 2.

TABLE 2

Year	Average no. of buses on road	Average no. of passengers carried daily*	Average no. of passengers per bus per day
1961-62	615	1,300,000	2113
1962-63	666	1,400,000	2102
1963-64	643	1,351,000	2101
1964-65	645	1,341,000	2079
1965-66	689	1,090,000	1582
1966-67	689	1,091,000	1583
1967-68	655	1,075,000	1641
1968-69	592	1,080,000	1824
1969-70	561	950,000	1693

*Upto April 1965, the passenger figures were based on the number of tickets sold. Two or more tickets used to be issued for some fare stages, for which tickets of the appropriate denomination were not printed. Hence the figures upto 1964-65 are on the higher side.

Overcrowding

2.5 During the peak periods (8.30 a.m. to 10.30 a.m. and 4.30 p.m. to 7.30 p.m.) the proportion of journeys to work/home is about two-thirds of the total trips performed. Concentration of employment in the C.B.D. aggravates the problem. The buses are not able to cope with the demand, and the passengers have to wait for a considerable time. The extent of overcrowding is evident from Table 3.

TABLE 3

Type of bus	Passenger-carrying capacity			
	Seated	Standing	Total	Average load per bus
Single-decker (Conventional)	36	18	54	125
Single-decker (under slung)	42	21	63	
Double-decker	64	22	86	150

Overcrowding in Calcutta's buses even beyond peak hours, has now become common. It is a normal sight to see bus passengers clustered all round the bus body maintaining a precarious foothold by taking advantage of any projection. Evidently, the fleet in operation is not adequate to meet the present requirements of the passengers. To meet such demand, strengthening of the bus fleet is imperative.

Fleet Utilisation

2.6 The fleet utilisation ratio is an indication of the state of serviceability of the fleet and efficiency of the maintenance methods used. Table 4 shows the utilisation ratio for the CSTC fleet which has continuously declined from 75.6 per cent in 1961-62. At present it is as low as 51.3 per cent.

TABLE 4

Year	No. of buses in fleet	Average number of buses in service daily	Fleet utilisation ratio per cent
1961-62	813	615	75.6
1962-63	867	666	76.8

Year	No. of buses in fleet	Average number of buses in service daily	Fleet utilization ratio per cent
1963-64	887	643	72.5
1964-65	916	645	70.4
1965-66	1070	689	64.4
1966-67	1104	689	62.4
1967-68	1106	655	59.2
1968-69	1131	592	52.3
1969-70	1093	561	51.3

Breakdowns

2.7 One of the important factors for the low fleet utilization is the increasing number of breakdowns experienced which is evident from Table 5.

TABLE 5

Year	Breakdowns per day		Breakdowns per 10,000 kms.	
	Number	Per cent increase over 1961-62	Number	Per cent increase over 1961-62
1961-62 . .	46	..	3.7	..
1962-63 . .	74	60.9	5.5	48.6
1963-64 . .	114	147.8	9.3	151.4
1964-65 . .	138	200.0	11.7	216.2
1965-66 . .	123	167.4	10.0	170.2
1966-67 . .	143	210.9	12.4	235.1
1967-68 . .	193	319.6	17.3	367.5
1968-69 . .	219	376.1	24.4	559.5
1969-70 . .	225	389.1	26.3	610.8

Expressed in terms of the number of buses on road per day the figures for the last twelve months are as given in Table 6 below:

TABLE 6

Year 1969-70	Daily average fleet on road	No. of break-downs in the month	No. of break-downs per vehicle in the month
April	560	6888	12.3
May	570	7580	13.3
June	566	6449	11.4
July	579	6310	10.9
August	550	6985	12.7
September	527	7009	13.3
October	582	7734	13.3
November	564	7165	12.7
December	553	6801	12
January	572	6698	11.7
February	571	5992	10.5
March	543	6567	12.1

It will be seen that when the average strength of the fleet on road varied from 527 to 582 each operating bus broke down on an average about 12 times per month. On an average, about 200 to 225 buses out of the total buses put on road in the morning broke down at various periods of the day. Ageing buses and poor maintenance are mainly responsible for the increasing number of breakdowns.

Age of the Fleet

2.8 Out of the total fleet of 1093 buses as on 31-3-70 about 72.3 per cent buses were over 5 years old and 47.3 per cent buses over 10 years old. The overage fleet is a very serious problem for the Corporation. It is difficult for the CSTC to replace such a large number of vehicles within a short period. However, efforts have to be made to replace overage and uneconomic-to-repair buses to the extent possible so that the present maintenance

work load (48.7 per cent of total fleet) is significantly reduced. This will also help in reducing the rate of breakdowns per day and minimise the missed kilometres which are very high. The CSTC is losing about Rs. 25,000 per day on account of such missed kilometerage.

2.9 The additions to and scrappings from the CSTC fleet during the period 1960-61 to 1969-70 are given in Table 7.

TABLE 7

Year	Addition	Scrapped	Closing total
1960-61	86	..	733
1961-62	80	..	813
1962-63	54	..	867
1963-64	20	..	887
1964-65	29	..	916
1965-66	180	26	1070
1966-67	34	..	1104
1967-68	2	..	1106
1968-69	31	6	1131
1969-70	54	92	1093

Thus during the last 10 years, only 124 buses were scrapped whereas more than 700 buses fell due for replacement. The replacement programme of the CSTC has not only been inadequate but also unevenly spread since its inception.

Procurement of Spare Parts

2.10 The difficulty of procurement of spare parts has been another important factor which has contributed to poor maintenance and fast deterioration in the condition of vehicles. Out of the total fleet of the Corporation, about 75 per cent are imported double deckers and heavy duty single deckers. The Corporation has been facing serious difficulties in procuring imported spare parts so essential for overhauling and maintenance of these buses. The number of buses held up for want of spare parts have been mounting from month to month. On 31st March, 1970, 298 buses were held up in the workshop for want of imported spares. There is also inordinate delay in the supply of spare parts

from overseas suppliers. Due to limited fleet strength the Corporation has been obliged to put even sick buses on the road resulting in frequent breakdowns, interruption in service schedules and increased cost of operation.

Financial Position

2.11 The financial position of the CSTC has been steadily deteriorating almost since its inception. The gap between the income and expenditure is widening every year. At present the undertaking cannot even meet its operational cost, not to speak of payment of interest on the capital or contribution to the depreciation fund. The yearwise quantum of losses, revenue and expenditure per kilometre for the last 6 years is given in Table 8.

TABLE 8

Year	Revenue per km. (in paise)	Expendi- ture per km. (in paise)	Loss per km. (in paise)	Total loss (Rs. in lakhs)
1964-65 . . .	119	131	12	70
1965-66 . . .	125	132	7	118
1966-67 . . .	132	159	27	147
1967-68 . . .	142	193	51	212
1968-69 . . .	160	238	78	269
1969-70 . . .	168	291	123	355

The increasing deficit is mainly due to (a) rise in prices of spares, fuel and lubricants, tyres and tubes; (b) increase in taxes and wages; (c) rise in rate of interest on capital; and (d) overage fleet.

Fare Structure

2.12 Since 1964-65, the income from the passenger fares has increased by only Rs. 40 lakhs whereas the expenditure has gone up by Rs. 325 lakhs. Fares could not be raised suitably. There was a small rise of one paise per stage in 1964 which yielded about Rs. 20 lakhs per year. In 1965 the fares were rationalised yielding another Rs. 20 lakhs. Since then there has been no revision of fares. A study of the comparative fare structure of Undertakings in the four cities of Calcutta, Bombay, Delhi and Madras

shows (Table 9) that for every fare-stage, the travelling distance allowed by the CSTC is by far the highest in the whole country. In fact for lower stages the travelling distance allowed by the CSTC is 50 per cent more than that allowed by the other three cities.

TABLE 9

(In kilometres)

Fare (Paise)	Calcutta	Bombay	Delhi	Madras
10 . . .	3.5	2.0	2.5	2.0
15 . . .	6.9	3.6	4.0	4.0
20 . . .	10.9	6.4	6.0	{ 6.0 8.0
25 . . .	13.9	9.2	8.0	10.0
30 . . .	17.6	12.0	12.0	12.0
35 . . .	19.6	14.8	16.0	{ 14.0 16.0
40	17.6	20.0	18.0

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CHAPTER III

BOMBAY ELECTRIC SUPPLY AND TRANSPORT UNDERTAKING

THE BEST which provides the bus services in Bombay is managed by a statutory Transport Committee of the Bombay Municipal Corporation. It caters largely to the needs of passengers who have bus-trip origin or destination at more than convenient walking distance from a suburban railway station as the east-west bus routes function as important cross-feeders to the suburban railways. It is at present operating on 119 routes covering a distance of about 1361 kms. The daily bus-kilometerage is approximately 245,000 or on an average 210 kms. per bus per day of which 64 per cent is within the Island (south of Mahim-Sion) and 36 per cent in the suburbs.

Fleet Growth

3.2 The fleet in 1947 consisted of 242 buses. By March 31, 1970, it has grown to 1307 (722 single-deck and 585 double-deck); buses, an increase of 440 per cent. The growth of fleet from 1961-62 to 1969-70 is given in Table 1.

TABLE 1

Year	Single-decker	Double-decker	Total
1961-62	459	694	1153
1962-63	478	742	1220
1963-64	626	732	1358
1964-65	602	735	1337
1965-66	607	735	1342
1966-67	645	758	1403
1967-68	811	597	1408
1968-69	764	604	1368
1969-70	722	585	1307

In addition, the BEST Undertaking has been operating a few trolley-buses between Gowalia Tank and Mazagaon over a dis-

tance of 3.9 kms. since June 1962. Out of a fleet of 12 trolley buses, 10 operate in daily service. The number of passengers being carried by trolley buses are estimated to be nearly 31,000 daily.

Passenger Growth

3.3 In 1947, the daily average number of passengers carried by the BEST services was 236,200 while in 1969-70 it was 22 lakhs (including trolley buses) showing an increase of more than 800 per cent. The growth of bus passengers during the period from 1961-62 to 1969-70 is given in Table 2.

TABLE 2

Year	Average number of buses on road	Daily average number of passengers carried	Average number of passengers per bus per day
1961-62	1153	1,593,431	1382
1962-63	1220	1,809,067	1483
1963-64	1358	1,784,789	1314
1964-65	1337	1,910,884	1429
1965-66	1342	1,841,277	1372
1966-67	1403	1,774,221	1265
1967-68	1408	1,812,850	1288
1968-69	1368	2,029,061	1483
1969-70	1307	2,223,826	1701

Long Queues

3.4 The average load per bus in Bombay is almost equal to its carrying capacity during peak hours, which is evident from the figures given in Table 3 below.

TABLE 3

Type of bus	No. of buses	Passenger carrying capacity			Average load per bus
		Seated	Standing	Total	
Single decker (Conventional)	15	40	10	50	46
	564	38	12	50	46
	579			Avg. 50	46

Type of bus	No. of buses	Passenger carrying capacity			Average load per bus
		Seated	Standing	Total	
Single decker (Underslung)	21	45	35	80	71
	31	27	23	50	45
	44	49	1	50	45
	47	45	5	50	45
	143			Avg. 54	48
Double decker	173	70	11	81	70
	318	78	11	89	77
	44	82	11	93	81
	50	98	..	98	85
	585			Avg. 88	77

As overcrowding in the BEST buses is not generally permitted, unlike those in Delhi and Calcutta, there are winding queues during peak hours at bus stops. Passengers have to wait for a considerable time to get into the bus.

3.5 The Undertaking had not been able to add double-deck buses to its fleet in the required number so far. The number of double-deck buses has decreased from 758 in 1966-67 to 585 in 1969-70. Since M/s Ashok Leyland have started manufacturing chassis for double deck buses from April, 1968, the BEST have acquired 50 such buses. Further, an equal number of semi-articulated double deck trailers has also been pressed into service.

Fleet Utilization

3.6 The fleet utilisation ratio for the BEST fleet since 1961-62 is given in Table 4.

TABLE 4

Year	No. of buses in fleet	Average number of buses in service daily	Fleet utilisation (per cent)
1961-62	1,153	878	78.04
1962-63	1,220	922	76.83
1963-64	1,358	987	76.75

Year	No. of buses in fleet	Average number of buses in service daily	Fleet utilisation (per cent)
1964-65 . . .	1,337	1,046	78.01
1965-66 . . .	1,342	983	75.97
1966-67 . . .	1,403	986	72.34
1967-68 . . .	1,408	1,088	77.27
1968-69 . . .	1,368	1,162	84.94
1969-70 . . .	1,307	1,168	89.36

The fleet utilisation ratio declined from 78.04 per cent in 1961-62 to 72.34 per cent in 1966-67. It has, however increased to 89.36 per cent in 1969-70 showing improvement in the working of the Undertaking in recent years.

Breakdowns

3.7 One of the important factors which affects the fleet utilisation ratio is the number of breakdowns experienced. In case of BEST the fleet utilisation has been gradually improving as number of breakdowns has reduced as is evident from Table 5. This has been possible due to scrapping of overage buses of the order of 412 during the last three years.

TABLE 5

Year	Breakdowns per 10,000 kms.
1961-62	9.0
1962-63	6.5
1963-64	5.0
1964-65	4.3
1965-66	5.1
1966-67	7.7
1967-68	5.5
1968-69	2.7
1969-70	2.5

Age of Fleet

3.8 Out of the total fleet of 1307 as on 31-3-70, 45.1 per cent (589) buses were over 5 year old and 17.4 per cent (228) buses over 10 years old and 3 per cent (39) over 15 years old. The overage fleet still remains one of the serious problems for the Undertaking. It is difficult for the BEST to replace such a large number of vehicles within a short period, nevertheless, all out efforts have to be made to replace overage and uneconomic-to-repair buses to the extent possible, so that the present fleet utilisation ratio is at least maintained.

3.9 The additions to and scrappings from the fleet during the period 1962-63 to 1969-70 are given in Table 6.

TABLE 6

Year	Addition	Scrapped	Closing total
1962-63	67	..	1220
1963-64	138	..	1358
1964-65	20	41	1337
1965-66	5	..	1342
1966-67	196	135	1403
1967-68	222	217	1408
1968-69	11	51	1368
1969-70	83	144	1307

Workshop Facilities

3.10 The detention period of vehicles can only be minimised by providing adequate workshop facilities and regular flow of essential spares and accessories required for their maintenance. The Undertaking has at present only one major workshop at Kingsway which was originally designed in 1948, to cater to the needs of 1000 buses only. The present Workshop facilities are inadequate to meet the needs of efficient maintenance and heavy repairs. In view of the increasing operational area, it may be necessary to examine the strengthening/decentralisation of its workshop facilities.

Route Planning

3.11 The present bus route planning in the island of Bombay has been mainly dominated by the desire to connect important localities by direct bus routes as far as possible. This tendency has resulted in the operation of a large number of bus services in a zig-zag way, especially in the city. Out of the 119 routes operated by the BEST Undertaking, over 74 routes fail to cover the operational costs due to low occupation ratio. The multiplicity of bus routes is also not convenient to the passengers since the operation of many bus routes permits only low frequencies. Taking into consideration the traffic pattern and with a view to improving the commercial effectiveness of the fleet, the BEST had recently undertaken a special study in this connection. It is hoped that the management will be able to introduce the desired re-routing plan shortly which will meet the requirements.

Bus Stations

3.12 The bus stations are required either at termini or at heavy loading points where amenities are to be provided for the relief staff, waiting passengers, etc. The total number of traffic control points at present is 49 in the city and 20 in the western suburbs and 17 in the eastern suburbs. Out of these, 29 in the city, 8 in the western suburbs and 10 in the eastern suburbs are major control points. At present, there are three major bus stations in the city viz., at Colaba, Sion and Mahim and two in the suburbs viz., at Mulund and Juhu. At least two more bus stations would require to be constructed in the city preferably, at Museum and Kings Circle. The BEST have been experiencing difficulties regarding availability of suitable plots of land for construction of bus stations and depots as it is not treated as a public utility institution.

Low Average Speed

3.13 Time schedule for buses are based on speeds derived from trial runs along the actual routes, and therefore, depend largely on traffic hazards and degree of congestion. The average speed of buses in Bombay is about 13 kms. per hour and on some routes it is as low as 6 kms. per hour. If the average speed of buses could be improved it will result in saving in time and equipment.

Financial Difficulties

3.14 The financial position of the BEST has been steadily deteriorating since 1963-64. The losses have increased from

Rs. 43.9 lakhs in 1963-64 to Rs. 155.1 lakhs in 1969-70. The yearwise revenue and expenditure per kilometre and quantum of losses since 1963-64 are given in Table 7.

TABLE 7

Year	Revenue per km. (in paise)	Expendi- ture per km. (in paise)	Loss per km. (in paise)	Total loss (Rs. in lakhs)
1963-64 . . .	115.1	121.1	6.0	43.9
1964-65 . . .	118.7	128.3	9.6	74.3
1965-66 . . .	120.6	143.3	22.7	169.0
1966-67 . . .	134.8	153.6	18.8	133.3
1967-68 . . .	144.3	163.4	19.1	145.6
1968-69 . . .	149.5	161.5	12.0	102.4
1969-70* . . .	154.8	172.5	17.7	155.1

*Estimated.

It is significant that between 1963-64 and 1969-70 the cost of operation per kilometre increased by 42.4 per cent whereas the earnings per kilometre increased by only 34.5 per cent. Thus the earnings have failed to keep pace with costs of operation.

3.15 The Undertaking has no capital base. The BEST have pointed out that they have been experiencing immense difficulty in securing adequate resources for their capital requirements. Besides the difficulty of access to capital resources, the Undertaking was unable to service its loans particularly short-term loans. The operations are carried on by resort to public loans every year, but the response has not been very encouraging.

Fare Structure

3.16 The fare structure of the BEST is given below:

Fare (Paise)	Kilometres
10	2.0
15	3.6

Fare (Paise)	Kilometres
20	6.4
25	9.2
30	12.0
35	14.8
40	17.6

The BEST offers 50 per cent concession to totally blind persons.



सत्यमेव जयते

CHAPTER IV

DELHI TRANSPORT UNDERTAKING

THE DTU is being operated as a unit of the Municipal Corporation of Delhi since April, 1958. It is virtually a monopoly organisation providing mass transportation facilities in the Delhi Metropolitan Area*. The DTU is essentially a city service. The unprecedented growth of population coupled with tremendous peripheral development of the city has resulted in increased travel distance for journey to work place, such as Central Secretariat, Connaught Place, Parliament Street, Indraprastha Estate, Ramakrishnapuram etc. It has led to a persistent increase in demand for extension of DTU services to newly developed colonies. To meet the growing demand, the DTU is providing its services on as many as 188 routes (60 main city routes, 118 subsidiary routes and 10 inter-State routes) covering 5264 kilometres against 67 routes operated over 1182 kilometres in 1961-62. The daily bus kilometerage is 173,877 or 182 Kms. per bus per day.

Fleet Growth

4.2 The fleet strength of the DTU as on 31-3-1959 was 516 and had increased to 1193† (consisting of 1166 single decker and 27 double decker) by 31st March, 1970 which shows an increase of 131 per cent. The growth of fleet from 1961-62 to 1969-70 is given in Table 1.

TABLE 1

Year	Fleet position at the end of the year		
	Single decker	Double decker	Total
1961-62	726	1	727
1962-63	783	1	784
1963-64	877	3	880

*There are 55 private buses holding permits from the State Transport Authority, Delhi for various routes in the Union Territory. It is understood that a scheme drawn up by DTU for taking over these routes is under consideration of Delhi Administration.

†Includes 5 mini buses.

Year	Fleet position at the end of the year		
	Single decker	Double decker	Total
1964-65	915	3	918
1965-66	951	22	973
1966-67	998	26	1024
1967-68	1179	27	1206
1968-69	1176	27	1203
1969-70	1166	27	1193

Passenger Growth

4.3 The daily average number of bus passengers rose from 289,000 in 1958-59 to 795,735 in 1969-70 showing an increase of 175 per cent. The number of passengers carried per day during the years 1961-62 to 1969-70 is given in Table 2.

TABLE 2

Year	Average number of buses on road per day	Average number of passengers travelled per day	Average number of passengers per bus per day
1961-62	552	505,038	915
1962-63	619	594,177	960
1963-64	639	550,508	862
1964-65	649	526,566	811
1965-66	676	525,527	777
1966-67	752	606,700	807
1967-68	848	722,400	852
1968-69	933	832,522	892
1969-70	919	795,735	866

Private Buses

4.4 As the DTU services were inadequate to meet the needs of the city's growing population, private buses had been

hired since July, 1964 to augment the transport capacity of the Undertaking in the interest of the travelling public. The number of private buses under DTU operation and number of passengers carried by them since 1964-65 are given in Table 3.

TABLE 3.

Year	No. of private buses under DTU operation	No. of Passengers carried per day
1964-65 . . .	31	20,722
1965-66 . . .	55	43,828
1966-67 . . .	63	47,245
1967-68 . . .	181	165,635
1968-69 . . .	200	148,653
1969-70 . . .	268	176,914

At present the total number of private buses on road under DTU operation is 320 and carry about 2.3 lakh passengers per day. The daily bus kilometerage covered by the private buses during 1969-70 was 38,430. Private operators have been engaged on 80 paise a kilometre system. Under this system they are tempted to carry as few passengers as possible by missing scheduled stops even when the buses are not fully loaded. Their only objective is to claim maximum distance. They do not conform to DTU discipline. Their buses are also not suitable for city operation. Thus the hiring of private buses is not a satisfactory solution.

Peak Hour Problem

4.5 During peak hours the proportion of journey to work and back home is about 65 per cent of the total trips performed. Long winding queues of the anxious passengers waiting for buses are a common phenomenon at bus stops and the buses are loaded beyond their normal capacity. At the starting station itself the buses are almost fully loaded and at many intermediate stops they do not pick up passengers. Even at stops where buses halt, passengers have to struggle hard to get into them. Evidently, the fleet in operation is not adequate to meet the present requirements of the passengers. Strengthening of the bus fleet is therefore, imperative. Moreover, for economic operation large capacity buses are required to be added to the fleet.

Fleet Utilisation

4.6 The fleet utilisation ratio since 1961-62 is given in Table 4.

TABLE 4

Year	Average number of buses in fleet daily	Average number of buses in service daily	Fleet utilisation ratio (per cent)
1961-62 . . .	703	552	78.52
1962-63 . . .	750	619	82.53
1963-64 . . .	840	639	76.07
1964-65 . . .	921	649	70.46
1965-66 . . .	940	676	71.91
1966-67 . . .	1010	752	74.46
1967-68 . . .	1123	848	75.51
1968-69 . . .	1228	933	76.00
1969-70 . . .	1162*	919†	79.09

*Excluding 36 buses earmarked for scrapping

†Excluding 10 trailers.

Breakdowns

4.7 The yearwise number of breakdowns per 10,000 Kms. is given in Table 5. It shows that there has been an increase of 200 per cent in the number of breakdowns during the period 1961-70.

TABLE 5

Year	Breakdowns per 10,000 Km.	Per cent increase over 1961-62
1961-62	4.7	
1962-63	8.5	80.8
1963-64	14.9	217.0
1964-65	11.7	148.9

Year	Breakdowns per 10,000 Km.	Per cent increase over 1961-62
1965-66	12.2	159.6
1966-67	10.7	127.6
1967-68	11.0	134.0
1968-69	10.3	119.1
1969-70	14.1	200.0

Expressed in terms of the number of buses on road per day the figures for the recent months are given in Table 6.

TABLE 6

Month/Year	Daily average fleet on road	No. of breakdowns in the month	No. of breakdowns per vehicle in the month
April 1969	941	5286	5.6
May 1969	900	5954	6.6
June 1969	850	5790	6.8
July 1969	917	6835	7.5
Aug. 1969	966	7825	8.1
Sep. 1969	943	7866	8.3
Oct. 1969	944	9236	9.8
Nov. 1969	928	8101	8.7
Dec. 1969	917	7351	8.0
Jan. 1970	926	7836	8.5
Feb. 1970	919	7230	7.9
March 1970	871	6658	7.6

It will thus be seen that when the average number of buses on road varied from 850 to 966 during 1969-70 each operating bus broke down, on an average, twice a week. Ageing buses

and poor vehicle maintenance *inter alia* are responsible for frequent and repeated breakdowns.

4.8 Loss of scheduled kilometres on account of frequent breakdowns results in loss of revenue and also causes inconvenience to the travelling public which is the main cause of criticism against the DTU. The incidence of missed kilometerage varied from 13 to 25 per cent of scheduled kms. during 1969-70 which may be seen in Table 7.

TABLE 7

Month/Year	Scheduled Kms.	Effective Kms.	Missed Kms.	Percentage of missed Kms. to scheduled Kms.
April 1969	6,249,077	5,434,901	814,176	13.0
May 1969	6,575,180	5,297,237	1,277,943	19.4
June 1969	6,274,103	4,818,758	1,455,345	23.2
July 1969	6,481,913	5,291,005	1,190,908	18.4
Aug. 1969	6,520,409	5,388,780	1,131,629	17.4
Sep. 1969	6,383,896	4,774,854	1,609,042	25.2
Oct. 1969	6,709,753	5,295,881	1,317,872	19.6
Nov. 1969	6,477,284	5,138,828	1,338,456	20.6
Dec. 1969	6,673,680	5,143,875	1,529,805	22.9
Jan. 1970	6,440,715	5,246,748	1,193,967	18.5
Feb. 1970	5,793,956	4,646,367	1,147,589	19.8
March 1970	6,244,352	4,812,182	1,432,170	22.9

Age of the Fleet

4.9 Out of a fleet of 1193 as on 31-3-1970, 679 buses *i.e.*, 56.9 per cent) were over 5 years old; 469 buses including 57 old buses* purchased from the Tamil Nadu State Transport Department (*i.e.*, 39.3 per cent) were over 8 years old and 290 buses including 57 Madras buses (*i.e.* 24.3 per cent) over 10 years old. The overage fleet is one of the serious problems for the DTU.

*Originally registered in 1955-56 at Madras.

Although it is difficult for them to dispose of or replace such large number of vehicles within a short period nevertheless, all out efforts have to be made to replace overage and uneconomic-to-repair buses to the extent possible, so that the present maintenance work load (about 21 per cent of total fleet off the road) is significantly reduced. This will also help in reducing the rate of breakdowns per day and minimise the missed kilometres, which were on an average 20 per cent during 1969-70.

Replacement of Overage Buses

4.10 The additions to and scrapping from the fleet during the period 1961-62 to 1969-70 are given in Table 8.

TABLE 8

Year	Addition	Scrapped	Closing total
1961-62	125	66	727
1962-63	89	32	784
1963-64	96	..	880
1964-65	121	83	918
1965-66	67	12	973
1966-67	161	110	1024
1967-68	205	23	1206
1968-69	82	85	1203
1969-70	1	11	1193

On the basis of generally accepted yardstick of eight years life of a single deck bus, the DTU needs to replace 469 buses immediately. Another 210 buses (over 8 years) will become due for replacement by March, 1973. The DTU would, therefore, need 679 buses in all to be replaced during the Fourth Plan.

Bus Depots

4.11 At present the Undertaking has six depots for maintenance and garaging facilities. The ideal capacity of these depots is 960 buses only while the present fleet of the Undertaking is 1193 with the result that all the depots except at Kalkaji (which is under utilised) are overcrowded. For economic operation and efficient working, a depot should be medium-sized with a stabling

capacity of 100 to 125 buses. The DTU therefore, needs at least 2 additional depots and 4 sub-depots, suitably located for garaging and maintenance facilities in order to reduce dead kilometrage to the minimum.

Workshop Facilities

4.12 The detention period of vehicles can be minimised only by providing adequate workshop facilities and regular flow of essential spares and accessories required for their maintenance. The DTU has at present one Central Workshop at Kingsway adjacent to the Coronation Depot to cater to the needs of the entire fleet for major repairs and overhaul. To cope with the increased workload of maintenance and heavy repairs of the anticipated large number of buses and in view of the large operational area, it will be necessary for the Undertaking to decentralise its workshop facilities.

Spare Parts

4.13 The DTU has been experiencing difficulties in getting spare parts in time. At present the bulk supply of the spares are being obtained directly from the manufacturers who do not have their sales depots at Delhi. The Working Group had discussed this issue with M/s Ashok Leyland and TELCO. Both of them have since agreed to open their sales depots at Delhi. This would not only be economical to the Undertaking but also reduce the procurement lead time.

Route Planning

4.14 The present bus route planning of the Undertaking has been mainly dominated by the desire to provide transport facilities in all parts of the Union Territory of Delhi including rural areas as it is the statutory responsibility of the Undertaking. This tendency has resulted in the operation of a number of bus routes which are long and circuitous, especially in the city. Almost all the routes operated by the DTU fail to cover even operational costs. The multiplicity of the bus routes is also not convenient to the passengers since the operation of many routes permits only low frequencies. Taking into consideration the traffic pattern and with a view to making them economically viable and improving efficiency, it is necessary for the Undertaking to reorganise its routes on scientific basis. It is learnt that traffic surveys for reorganisation of the routes are already in progress.

Financial Position of DTU

4.15 Finances of DTU have reached rock-bottom and it is faced with increasing losses every year. The gap between the revenue and expenditure of the undertaking has been constantly increasing since 1963-64 as will be seen in Table 9.

TABLE 9

Year	Income		Expenditure		Loss	
	Total (Rs. in lakh)	Per Km. in Paise	Total (Rs. in lakhs)	Per Km. in Paise	Total (Rs. in lakhs)	Per Km. in Paise
1963-64	433.24	86.58	471.81	94.28	38.57	7.70
1964-65	451.70	91.55	511.71	103.72	60.01	12.17
1965-66	479.60	94.97	566.39	112.16	86.79	17.19
1966-67	553.55	103.56	653.78	122.31	100.23	18.75
1967-68	608.32	103.12	755.73	128.11	147.41	24.99
1968-69	668.76	105.27	835.64	131.57	166.88	26.30
*1969-70	662.14	107.74	904.49	147.17	242.35	39.43

*Estimated

The losses are mainly attributable to soaring prices, increase in taxation and frequent rise in the rates of dearness allowance to the employees. As a consequence, the DTU has been unable to make payments to its suppliers in time and thereby the purchase of stores and spare parts has become extremely difficult.

4.16. The DTU gets money from two major sources—loans from the Central Government to meet its entire capital expenditure, and its own revenues for running expenses. At present both these sources are inadequate. The Central Government had advanced loans amounting to Rs. 13.28 crores (excluding a non-repayable loan of Rs. 38.13 lakhs) to the Undertaking by the end of the year 1969-70. Against this amount a sum of Rs. 278.10 lakhs has so far been repaid by the Undertaking. The depreciated value of the assets of the DTU as on 31-3-1969 was, however, Rs. 604.94 lakhs only. Due to its difficult financial position, the Undertaking has not been able to repay any of the loan instalments and interest charges thereon since 1st October, 1965. The over-due loan instalments and the interest charges at the close of the year 1969-70 amounted to Rs. 646.65 lakhs,

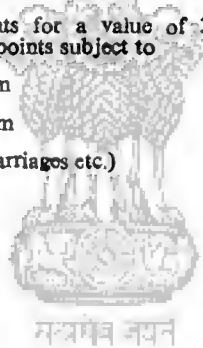
Fare Structure

4.17 The fare structure of the DTU is telescopic. The bus fares are fixed on the basis of distance travelled subject to the minimum of 10 paise for adults and 5 paise for children for the first 2.5 kilometres as per fare structure revised in May, 1964. An extra charge of 5 paise per passenger is made irrespective of the distance travelled on the Express Services. For other types of usage, the following schedule is in force since 1964:

1. Monthly pass for a value of 45 fares between two fixed points.
2. All route one day ticket for Sunday/holiday

For adults	Re. 1.00
For children	Re. 0.75
3. All route transferable pass per month. Rs. 30.00
4. Monthly pass for students for a value of 30 fares between two fixed points subject to

Minimum	Rs. 4.50
Maximum	Rs. 12.50
5. Special hire per KM., (marriages etc.) Rs. 2.00
6. School hire per KM. Rs. 1.20



CHAPTER V

MADRAS CITY TRANSPORT SERVICES

THE bus services in Madras are provided by the Tamil Nadu State Transport Department. In October, 1947, 30 buses were introduced for operation in the city and gradually the extent of operation has been enlarged. The city and mofussil operations of the Tamil Nadu State Transport Department are combined. At present the city and suburban fleet consists of 1022 buses, the average number of buses on the road during 1969-70 being 919 operating on nearly 200 routes.

Fleet Growth

5.2 The city fleet has grown from 772 to 1022 buses during the period April, 1964 to March 31, 1970 showing an increase of 32.4 per cent. The growth of fleet from 1964-65 to 1969-70 is given in Table 1.

TABLE 1

Year	Average number of buses in the fleet	Per cent increase over 1964-65
1964-65	772	..
1965-66	883	14.3
1966-67	990	28.2
1967-68	1064	37.8
1968-69	1063	37.7
1969-70	1022	32.4

Passenger Growth

5.3 In 1964-65, the daily average number of passengers, carried by the Madras City Transport Services was 7.20 lakhs while in 1969-70 it was 10.4 lakhs showing an increase of 44.4 per cent. The yearwise growth of bus passengers since 1964-65 is given in Table 2.

TABLE 2

Year	Average number of buses on road	Average number of passengers carried daily	Average number of passengers per bus per day
1964-65 . . .	602	720,000	1196
1965-66 . . .	708	730,000	1031
1966-67 . . .	808	850,000	1052
1967-68 . . .	926	962,000	1039
1968-69 . . .	925	970,000	1049
1969-70 . . .	919	1,040,000	1132

5.4 During peak hours there is overcrowding in the buses. While the capacity of a bus is 61 passengers (36 sitting and 25 standing) it carries about 90 passengers during peak period. To meet peak hour rush the Department needs large capacity buses. At present it has only single deck buses in its fleet. The Department has not so far introduced double deck buses due to difficulties such as, overhanging electric wires, narrow roads with sharp curves etc. The city fleet has been standardized on Leyland Comet (210" Wheel base) and Benz (205" wheel base) because of their capacity to withstand the strain of the city operation. The Department has recently introduced trailer type buses on experimental basis having a capacity of 101 passengers, excluding the driver and two conductors. Standlees are eliminated in the trailer bus completely.

Fleet Utilisation

5.5 The utilisation ratio of the Madras City Transport Services has been gradually improving from year to year which is evident from Table 3.

TABLE 3

Year	No. of buses in fleet	Average number of buses in service daily	Fleet utilisation ratio (percentage)
1964-65 . . .	772	602	78.0
1965-66 . . .	883	708	80.2

Year	No. of buses in fleet	Average number of buses in service daily	Fleet utilisation ratio (percentage)
1966-67	990	808	81.6
1967-68	1064	926	87.0
1968-69	1063	925	87.0
1969-70	1022	919	89.9

Breakdowns

5.6 The number of breakdowns per 10,000 kms. since 1964-65 is given in Table 4.

TABLE 4

Year	Breakdowns per 10,000 Kms.
1964-65	4.8
1965-66	3.1
1966-67	3.4
1967-68	4.2
1968-69	14.2
1969-70	16.6

It will be seen from the above table that the rate of breakdowns has suddenly gone up to 14.2 per 10,000 Kms. in 1968-69 and further increased to 16.6 in 1969-70. The reason for this steep rise requires to be examined.

Age of the Fleet

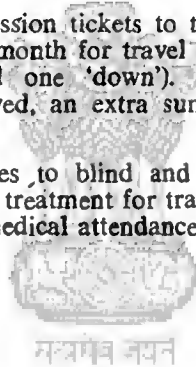
5.7 Out of the fleet of 1022 as on 31-3-1970, only 11.7 per cent (120) buses were 5 years old and 2.9 per cent (30) buses over 8 years old. There was no bus in the fleet which is over 10 years old. Thus over-age fleet is not much of a problem in Madras City as the Tamil Nadu State Transport Department has been following a policy of timely replacement of its overage fleet which is 6 years or 3.5 lakh Kms. in case of Ashok Leyland and 5 years or 2.75 lakh Kms. in case of TMB buses.

Fare Structure

5.8 The fare structure for the Madras City Transport Services has been fixed by the Government. The fares are not changed as and when the expenditure increases. According to the Tamil Nadu State Transport Department about 40 per cent of the city routes are uneconomic. The existing fare structure of the City Services is at the rate of 10 paise for the first stage of 2 kilometres approximately and 4 paise in addition for every subsequent stage of 2 kilometres approximately, and the actual fare is rounded off to the nearest 5 paise denomination.

The State Transport Department offers the following concessions to the public and student community:

- (i) Monthly season tickets to regular passengers at the rate of 40 single fares;
- (ii) Monthly concession tickets to the students at a flat rate of Rs. 10 per month for travel on any of the city routes (one 'up' and one 'down'). If travel by additional route is involved, an extra sum of Rs. 5 per month is charged;
- (iii) Free bus passes to blind and maimed persons during their period of treatment for travel between the residence and place of medical attendance.



CHAPTER VI

DESIGN AND AVAILABILITY OF BUSES

THE city transport undertakings have the general duty of providing efficient, adequate, economical and coordinated system of road transport services. The service expected from the undertakings includes elements such as capacity, frequency, reliability, speed, safety and financial viability. The broad aim of the undertakings should be to provide a comprehensive network of services, including certain routes that may individually not be economic in the changing conditions of the cities. It is also desirable that peak waiting time should not be more than 10 minutes on the crowded routes.

Large Capacity Buses

6.2 In order to meet the peak hour demand we recommend that the city transport undertakings should introduce large capacity buses, preferably double deckers. Conventional single deck buses are not economical since the pay load is small, being about 60 per cent of that of a double decker, while the cost of operation is marginally less. The double deck buses also occupy less road space for carrying a given number of passengers.

Availability of Double Deck Buses

6.3 The proportion of the double deck buses to the total fleet for different city transport undertakings is given in Table 1.

TABLE 1

(As on 31st March 1970)

Undertaking	Total fleet	No. of double deckers (integrated and articulated)	Percentage of double deckers to total fleet
CSTC	1093	375	34.3
BEST	1307	585	44.8
DTU	1193	27	2.3
TNSTD	1022	Nil	Nil

6.4 The CSTC and BEST have been experiencing difficulties in procuring integrated double deck buses for replacement/expansion. The manufacturers of heavy vehicles, in this case the Ashok Leyland, have on the other hand indicated that they have not been able to cater to the requirements of city undertakings as no firm orders were placed on them in advance. The existing procurement lead time for new double deck buses is nearly 14 to 16 months. We hope that this difficulty would not arise in future as Ashok Leyland have already got installed capacity for production of 1000 heavy duty vehicles and with the implementation of recommendations made by us in subsequent chapters of the report it should be possible for the undertakings to forecast their requirements and place orders in advance.

Production of Transport Vehicles

6.5 At present the chassis manufactured by M/s Ashok Leyland, TELCO, Premier Automobiles and Hindustan Motors are basically not only common for city operation and long-distance passenger movements but also for goods vehicles. The annual installed capacity of the above manufacturers for commercial chassis (buses and trucks) is 7000, 24000, 9000 and 15000 respectively. During 1969 the total production of commercial chassis by the above manufacturers was 31,000 against the total installed capacity of 55000. The manufacturers have, therefore, no difficulty in meeting the demand of transport undertakings for the single deck buses. However, these chassis are not suitable for operation in urban areas. The city transport undertakings do need special type of buses as distinct from buses required by road transport corporations for long distance travel. In view of this, it would be advantageous for the city transport undertakings to standardize their requirements for bus chassis. If this is done, the number of chassis required by the various city transport undertakings and quantity of various units, such as engine, gear box and their components, etc. would be substantial with the result that the manufacturers would find it economical to manufacture and thus reduce the cost. This would also enable the various city transport undertakings to get spare units or spare parts from other undertakings in the event of emergencies.

Standardisation

6.6 Taking into account the production programme of the manufacturers we suggest that the requirements of the bus chassis for city transport may be standardized to the following three categories:

1. Cometised Titan Double Deck chassis.

2. Semi-articulated vehicle with a Leyland Comet Tractor and a suitable Trailer Chassis to mount a single or double deck bogie.
3. Leyland Comet AL-COP-311 passenger chassis with a wheel base of 210", or TMB chassis LP-1210/52 with a wheel base of 205".

1. *Cometised Titan Double Deck Chassis*—This is basically a Titan PD-3/5 Chassis fitted with a Comet .370 engine and a Comet GB 241 5-speed gear box. The engine and gear box are same as used on a single deck Comet chassis. The Cometised Titan Chassis is fitted with an imported fully floating Titan 3/5 rear axle with a worm drive. However, the vehicle would have to be fitted with 14" clutch instead of 13" as at present.

M/s Ashok Leyland have been manufacturing Titan ALPD 1/1. 222" wheel base double decker passenger chassis commonly called "Beeverised" chassis. These chassis are fitted with 5 speed constant mesh closed ratio gear box and powered by Ashok Leyland .680 6-cylinder engine, developing 150 H.P. at 2000 RPM. The BEST had purchased 50 of these chassis and the Ahmedabad Municipal Transport Service had also purchased a few of them. These chassis have not been found quite suitable for city transport due to (i) high capital cost; (ii) high operating cost, especially on account of high fuel consumption (approximately 48 litres per 100 Kms.) and (iii) low fleet utilisation and high breakdowns due to premature failure of clutch, defects in steering etc. Cometised Titan Double Deck Chassis will represent an improvement over "Beeverised" chassis.

2. *Semi-articulated vehicle with a Leyland Comet Tractor and a Suitable Trailer Chassis to mount a single or double deck bogie*—The capital cost of these buses is low and the operating expenses, including fuel consumption are also comparatively smaller. This bus is built on Mahindra Owen make trailer chassis. The trailer is hauled by a Leyland Comet 118" wheel base tractor. For city type of operation these buses have been found to be suitable compared to single decker as they carry as many as 100 passengers seated. The BEST has at present 50 such buses which are giving satisfactory service. The DTU has recently placed an order for 50 such buses. Recently Tamil Nadu State Transport Department has introduced one such bus on experimental basis.

M/s Tata Engineering & Locomotive Co. Ltd. (TELCO) manufacture 127" wheel base tractor chassis. Similarly M/s

Premier Automobiles are manufacturing a tractor chassis with a Perkins 363 engine. Both these tractor chassis have not yet been tried out in city service. However, these tractor chassis do not appear to be suitable for a double deck trailer haulage due to the low maximum engine torque. They may be suitable for haulage of a single deck trailer.

3. *Leyland Comet A1-COP-3/1 Passenger Chassis and TMB Chassis LP-1210/52*—These Chassis are being used successfully by the State Transport Undertakings in the country.

M/s Ashok Leyland have recently come out with their "Cheetah" Single Deck passenger bus chassis with a wheel base of 194". The engine is mounted in the rear longitudinally. The carrying capacity of this chassis is 66 (50 seated and 16 standees) with a 2/2 seating arrangement. This is being tried on an experimental basis in Bombay and Delhi. The TELCO also propose to bring out shortly a new TMB chassis with an extended front overhang and 60 per cent rear overhang, fluid coupling and power steering. It is expected to carry 83 passengers (43 sitting and 40 standees).

6.7 The Working Group is also of the view that in case any manufacturer is able to develop chassis conforming to the above requirements, these can also be considered for purposes of standardisation for use in city operations.

Reconditioning of Buses

6.8 The fleet in Bombay and Calcutta mostly consists of imported double deckers and heavy duty single deckers, though lately some indigenous medium duty single deckers have been added. The Delhi fleet consists of imported heavy duty single deckers and indigenously made medium duty single deckers, the proportion of the latter being quite substantial. It would be economical to bring back to road some of the old imported buses through reconditioning and overhauling. According to a study made by the Ahmedabad Municipal Transport Service, reconditioning of a single deck imported bus would result in a saving of Rs. 20,000 per vehicle over and above other savings.

6.9 The undertakings have however, been facing severe difficulties in procuring imported spares required for overhauling and reconditioning due to shortage of foreign exchange. The situation in Calcutta is worse as the CSTC has 815 imported vehicles out of a total fleet of 1093. It will certainly be of great advantage if the double deckers Underfloors and PS-11s, which

have the same spares as the Double deckers, can be brought back to service. Total number of idle buses of these models is 150. An *ad hoc* licence of Rs. 10.34 lakhs was received in 1969 for repairing some of these idle buses. Another *ad hoc* allotment* of Rs. 17.80 lakhs would be necessary to bring all these vehicles back to service. If the idle imported buses can be pressed into service the capital cost on replacement can be considerably cut down. The idle PS-11s which are single deckers can be easily converted into double deckers. Thus there will be corresponding reduction in the cost of replacement.

6.10 As regards the BEST, the requirement of foreign exchange for procuring imported spares is Rs. 30 lakhs. This would enable the undertaking to recondition 200 overage imported buses.

6.11 The D.T.U. and the Tamil Nadu State Transport Department do not need any additional foreign exchange for reconditioning of imported buses.

We recommend that the Ministry of Industrial Development should allot necessary *ad hoc* foreign exchange to the CSTC and the BEST for reconditioning of their imported buses.

Imported Spares

6.12 The present system of allocation of foreign exchange makes no distinction between the imported and indigenous buses. Till 1967-68 the basis was Rs. 1000 per bus per annum. Since then it has been gradually reduced to Rs. 600. This amount is just adequate for meeting the needs of the Indian made medium duty vehicles. Treating imported buses on the same footing as the buses manufactured in India is not justified. We, therefore recommend that the allotment for existing heavy duty buses which were imported from U.K. should be at least Rs. 2500 per year.

6.13 Most of the vital components of the double deckers now being manufactured by Ashok Leyland at Madras are imported from U.K. For allotment of foreign exchange these buses should, therefore, be treated at par with the imported buses. The Working Group would recommend that the Ministry of Industrial Development may adopt the above basis for allocation of foreign exchange for imported spares and also ensure clearance of licences expeditiously.

*An application for this has already been submitted to the Ministry of Shipping & Transport.

Prices of Commercial Vehicles

6.14 Prices of commercial vehicles have been steadily increasing. The cost of chassis alone has gone up by about 32 per cent during the last five years. Ashok Leyland single deck bus chassis which cost about Rs. 44,000 in 1964-65 to-day costs Rs. 58,000. This is mainly due to general rise in price level resulting in increase in the price of the materials and in wage bill and increased taxation.* The rate contract price fixed by DGS&D is being availed of by the Undertakings while ordering purchases of commercial chassis. It is understood that recently the manufacturers have asked for an increase in DGS&D rate of chassis because of the reported wide gap between the market price and the DGS&D rate. Standardisation of requirements of City Transport Undertakings as suggested by us in this chapter should, however, help in securing economies in the cost of production and consequently affect the price structure.



*According to the Road Transport Taxation Inquiry Committee (November 1967), the total tax element in the price of a commercial vehicle was estimated to be 48 per cent of the ex-factory price.

CHAPTER VII

FINANCIAL REQUIREMENTS OF THE UNDERTAKINGS

As mentioned in the earlier chapters, all the four city transport undertakings have not been able to meet even their operational cost. The extent of losses incurred by them which are increasing every year may be seen in Table 1.

TABLE 1

Year	BEST			CSTC		
	Revenue per km. (in paise)	Expenditure per km. (in paise)	Total loss during the year (Rs. in lakhs)	Revenue per km. (in paise)	Expenditure per km. (in paise)	Total loss during the year (Rs. in lakhs)
1964-65	118.7	128.3	74.3	119.0	131.0	70.1
1965-66	120.6	143.3	169.0	125.0	132.0	117.7
1966-67	134.8	153.6	133.3	132.0	159.0	146.9
1967-68	144.3	163.4	145.6	142.0	193.0	212.4
1968-69	149.5	161.5	102.4	160.0	238.0	268.8
*1969-70	154.8	172.5	155.1	168.0	291.0	355.0

Year	DTU		
	Revenue per km. (in paise)	Expenditure per km. (in paise)	Total loss during the year (Rs. in lakhs)
1964-65	91.6	103.7	60.0
1965-66	95.0	112.2	86.8
1966-67	103.6	122.3	100.2
1967-68	103.1	128.1	147.4
1968-69	105.3	131.6	166.9
*1969-70	107.7	147.2	242.4

*Estimated.

7.2 The losses in case of Calcutta State Transport Corporation amount to nearly 42 per cent of the expenditure per kilometre while that of BEST and D.T.U. amount to 10.0 and 26.8 per cent respectively. As regards Madras city, separate figures of revenue and expenditure are not maintained but it is understood that the Undertaking is able to make up losses on city transport services by operating in mofussil areas. Way and means advances are being made available to the CSTC by the State Government. The losses in case of BEST are being met by profits of Electricity Undertaking. Although the capital requirement of the DTU is met by Central Government in full, the position is different because it receives loans instead of capital contribution which have to be repaid with interest. The D.T.U. has, however, been unable to repay even the interest charges leave alone the loan instalments since 1965.

Financial Requirements for Augmentation of Fleet

7.3 If the city undertakings have to render satisfactory services, it is necessary to arrange for their financial requirements for replacement of overage buses and also reasonable augmentation of their fleet. The requirements of different undertakings during the remaining period of the Fourth Five Year Plan are discussed below:

(i) *C.S.T.C.*—The C.S.T.C. was originally developed for a target of daily supply of 750 buses (300 double deckers and 450 single deckers). This target was nearly reached in the beginning of 1967. However, the out-shedding of 750 buses per day could not be maintained for long due to preponderance of old and dilapidated buses and foreign exchange difficulties. At the end of 1971-72 the CSTC would be left with an effective fleet of 587 buses (185 double deckers and 402 single deckers). Leaving out the question of increasing passenger demand and expansion necessary to cope with it, the Working Group is of the view that the CSTC should at least have a fleet capable of daily supply of 750 buses which was the original target. Taking the fleet utilisation ratio to be 80 per cent, it would require a fleet of 937 buses (375 double deckers and 562 single deckers). In other words, the CSTC will have to acquire 190 double deckers (375—185) and 160 single deckers (562—402) by 31-3-72. Out of these 350 buses the CSTC should renovate 150 buses (60 double deckers and 90 single deckers) and procure 200 new buses (130 double deckers and 70 single deckers). The cost of the above programme works out to be Rs. 321.50 lakhs (Rs. 28 lakhs for renovation and Rs. 293.50 lakhs for new buses). Out of Rs. 321.50 lakhs, the CSTC would be able to obtain a loan of Rs. 100 lakhs through the Industrial Development Bank of India. It is recommended that

the SCTC should receive immediate financial assistance of the order of Rs. 221.50 lakhs during 1970-72.

During 1972-74, the CSTC would require another 203 buses (165 double deckers and 38 single deckers) costing about Rs. 326.30 lakhs for replacing depreciated buses. The CSTC would be able to get a loan of Rs. 100 lakhs through the Industrial Development Bank of India. The balance of Rs. 226.30 lakhs would therefore, have to be provided to the CSTC.

To sum up, the net requirement of funds for the CSTC work out to:

1970-72	. . . . .	Rs. 221.50 lakhs
1972-74	. . . . .	Rs. 226.30 lakhs

In addition, CSTC needs about Rs. 50 lakhs for other Capital expenditure, viz., construction of new depots, bus terminals, passenger shelters, plant and machinery etc.

The Planning Commission have agreed to a provision of Rs. 5 crores for the Calcutta State Transport Corporation to be included in the Fourth Plan (1969-70) of West Bengal. This excludes the amount which would be available for expansion programme of the Corporation as loan from Industrial Development Bank of India for purchase of chassis. Out of the above plan provision about Rs. 50 lakhs have been spent during 1969-70. This leaves a balance of Rs. 4.5 crores for four years (1970-71 to 1973-74) and will take care of the programme recommended by us for the four years 1970-71 to 1973-74. It is, however, necessary that funds are actually provided to the Corporation on the basis of this allocation in the Annual Plans and there is no lapse of funds. For 1970-71 the Planning Commission are understood to have agreed to a provision of Rs. 50 lakhs for the Corporation in addition to Rs. 50 lakhs which are to be made available to the Corporation as loan from the Industrial Development Bank of India. We recommend that taking into account the immediate requirements of Calcutta State Transport Corporation and the distribution of balance plan provision on a *pro-rata* basis, the provision for the current year should be augmented by Rs. 60 lakhs.

(ii) **BEST.**—The requirement of BEST works out to 150 double deckers every year for replacement/expansion programme in order to maintain an effective fleet of 1500 buses. The BEST would thus need Rs. 3 crores every year for the above programme. It is understood that the requirements of BEST from year to year are met by the Municipal Corporation through public loans supplemented by internal resources of the Undertaking.

(iii) *DTU*.—Taking into account (a) the growth of population and consequent increase in the number of commuters at the rate of 80,000 per year, the buses being the only existing means of mass transportation in Delhi; (b) the dispersal of industries; (c) shifting of Jhuggis and Jhonpries and slum dwellers to the various outlying colonies of the Union Territory in accordance with the proposals made in the Master Plan for Delhi; and (d) the replacement of the overaged stock, the DTU would need in all 1127 (679 buses for replacement of overage buses and 448 for expansion) for the four years period 1970-71 to 1973-74. This is expected to cost Rs. 10.5 crores. In addition, a minimum of Rs. 1.5 crores would be required for additional auxiliary vehicles and other ancillary facilities like depots (2), sub-depots (4) etc. Thus the total financial requirements of the DTU amount to Rs. 12.00 crores for four years or Rs. 3.00 crores per annum. The Planning Commission had approved the Fourth Plan outlay of Rs. 10 crores for the DTU, against which a loan of Rs. 1.6 crores was disbursed to the DTU during 1969-70. This leaves balance outlay of Rs. 8.4 crores for four years. The DTU would, therefore, need further provision of Rs. 3.6 crores (Rs. 12 crores—Rs. 8.4 crores) during the Fourth Plan for expansion and replacement of its overaged stock. During the current year 1970-71, a budget provision of Rs. 2 crores has been made for DTU. On a proportionate basis, we recommend that this provision should be augmented by Rs. 1 crore. It may be added that the above requirement is exclusive of the capital requirements for replacement of 316 private buses, which is expected to cost Rs. 3 crores.

(iv) *Madras City Transport Services*.—The requirements of Madras city as indicated by the Director, Tamil Nadu State Transport Department, on the basis of norms adopted in the past, are 487 buses for replacement during the remaining four years of the Fourth Plan. The requirements for augmentation of city fleet during the same period will be 200 buses at the rate of 50 buses per year. The total capital requirement will be Rs. 4.6 crores for replacement programme to be met out of the depreciation fund and Rs. 1.9 crores for augmentation of the city fleet besides Rs. 50 lakhs required for extension of depot facilities in the city. A provision of Rs. 4 crores has been made in the Fourth Plan of the State Government for transport services for the whole of Tamil Nadu State. This excludes the requirements for replacement of overaged buses to be met out of depreciation fund. The Working Group recommends that an amount of Rs. 2.4 crores (Rs. 1.9 crores + 0.5 crore) should be made available to the Tamil Nadu State Transport Department exclusively for the expansion of city transport services during the period 1970-74.

CHAPTER VIII

PATTERN OF TAXATION OF PASSENGER ROAD TRANSPORT SERVICES

PASSENGER road transport services in cities are subject to taxes both direct and indirect. Direct taxes include motor vehicle tax and passenger tax levied by the State Governments. In Bombay the wheel tax is also levied by the local body. Indirect taxes on passenger buses are levied by the Central Government as well as by the State Governments. The taxes levied by the Central Government comprise import and excise duties on motor vehicles, motor vehicle components, tyres and tubes, batteries, H.S.D. oil and lubricants. The indirect taxes, levied by the State Governments include sales tax on motor vehicles, bodies, parts, motor fuel, tyres and tubes and lubricants.

Direct Taxes

8.2 The motor vehicle tax is levied by the State Governments on the basis of seating capacity of a passenger vehicle. In the case of Bombay a surcharge is also levied on diesel vehicles. Rates of motor vehicle taxes in the metropolitan cities are given in Annexure I.

8.3 In the case of BEST, the motor vehicle tax on a 40-seater bus amounted to Rs. 1746 per annum in 1964-65. It was raised by about 15 per cent to Rs. 2010 per annum in March 1966. The tax on a 52-seater bus was increased from Rs. 2098 to Rs. 2450 per annum or 16.6 per cent during this period. There has been no increase in the motor vehicle tax in Bombay since March 1966. It may be mentioned that the Government of Maharashtra gives a rebate of one-third on the motor vehicle tax on the vehicle plying within municipal areas.

8.4 The motor vehicle tax in Delhi which stood in 1964-65 at Rs. 1720 per annum for a 40-seater bus and Rs. 2200 for a 52-seater bus was increased by 25 per cent in 1969 to a level of Rs. 2150 and Rs. 2750 per annum, respectively.

8.5 In Calcutta, the motor vehicle tax on 40-seater and 52-seater bus amounts at present to Rs. 2190 and Rs. 2550 per annum respectively. There has been no change in the tax there during the last five years.

8.6 In Madras, the motor vehicle tax for city services is levied at the rate of Rs. 4480 and Rs. 5800 per annum for a 40-seater and 52-seater bus respectively where the total distance covered by a vehicle in a day does not exceed 210 Kms. The Government of Tamil Nadu levies the motor vehicle tax at a lower rate on vehicles which are confined to municipal limits. The Government of Tamil Nadu has increased the motor vehicle tax on passenger vehicles operating on mofussil services by about 20 per cent with effect from 1st July, 1970. However they have decided not to enhance the rates of tax for city services as these services are generally not so remunerative as mofussil services.

8.7 Another direct tax levied by some of the State Governments is passenger tax. In the case of BEST, this tax is levied at the rate of 5 per cent of the inclusive amount of fares with effect from September 1966 and worked out to Rs. 3589 on an average for 52-seater bus for 1968-69. This rate of tax is applicable to State carriages plying in municipal areas. The tax on passengers carried by vehicles on mofussil services is as high as 20 per cent. In the case of city and suburban passenger services in Madras, passenger tax is levied at an average rate of Rs. 3700 per bus per annum. Passenger tax is not levied in Delhi and Calcutta.

8.8 The direct tax levied in Bombay by the local body is wheel tax on passenger vehicles. It is levied at the rate of Rs. 65 per quarter per vehicle. Table 1 below gives the percentage share of direct taxes in the total expenditure per vehicle.

TABLE 1

Direct taxes	(In rupees)			
	DTU 1969-70	BEST 1969-70	CSTC 1969-70	MSTD 1969-70
Motor Vehicle Tax (52 seater)	2750	2450	2550	5800
Passenger Tax	..	3859	..	3700
Wheel Tax	..	260	..	..
Total Direct Taxes	2750	6569	2550	9500
Annual Expenditure per vehicle	76000	91955	77000	79474
Percentage of direct tax in the total cost of operation per vehicle.	3.6	7.1	3.3	11.9

8.9 It will be observed that the highest share of direct taxes in the total expenditure per vehicle in 1969-70 was 11.9 per cent in the case of Madras city and Suburban Services as compared with 3.6 per cent for DTU, 7.1 per cent for BEST and 3.3 per cent for Calcutta State Transport Corporation.

Indirect Taxes

8.10 The incidence of Central Taxes on passenger vehicles as worked out by the BEST is given at Annexure II. The total tax burden of the Central levies on a 52 seater bus has been estimated at Rs. 16,407 for the year 1970.

8.11 The incidence of indirect taxes levied by the State Governments in Metropolitan cities* and the percentage share of these taxes in total annual expenditure per vehicle for the year 1970 is given in Table 2.

TABLE 2

Indirect taxes	(In rupees)		
	DTU	BEST	MSTD
1. Sales tax on HSD Oil	1045	1192	1740
2. Sales tax on tyres and tubes	808	687	715
3. Sales tax on chassis and body	1263	1384	1390
Total State taxes	3116	3263	3845
Central taxes †	16407	16407	16407
Total taxes	19523	19670	20252
Annual Expenditure per vehicle	76000	91955	79474
Percentage share of indirect taxes in total cost of operation per vehicle.	25.7	21.3	25.4

8.12 The share of indirect taxes levied by the Central and State Governments in the total expenditure per vehicle in 1970 amounted to 25.7 per cent for DTU, 21.3 per cent in the case of BEST and 25.4 per cent for MSTD.

*Excluding Calcutta.

†Central taxes as calculated by BEST are assumed to apply to Delhi and Madras as well.

Taxes in Foreign Countries

8.13 In this context, a reference to the comparative survey* of taxation of public transport undertakings in certain West European countries, viz., Belgium, West Germany, France, Italy, Netherlands, Austria, Switzerland and Spain, will be relevant. The results of the survey in respect of motor vehicle tax transport tax and fuel tax are as follows:

(a) *Motor Vehicle Tax.* A complete exemption from Motor Vehicle Tax is granted in Belgium. In Switzerland, there is extensive exemption from motor vehicle tax in a number of cantons. In Italy, there is partial exemption and buses on scheduled public services benefit from one-third reduction in the motor vehicle tax. In West Germany also, there is partial tax exemption and a rebate of 50 per cent is given in the graduated tax leviable on buses on scheduled public services according to the maximum permissible total weight. There is no exemption from Motor Vehicle Tax in France, Netherlands and Austria.

(b) *Transport Tax.* Apart from Switzerland, the transport services in all these West European countries have to pay a turn-over or Transport tax.

(c) *Fuel Tax.* With the exception of Switzerland, Undertakings in all the countries are liable for full fuel tax. In Switzerland, extensive relief is given to the transport undertakings in respect of Fuel Tax with effect from 1-4-1968, the rate of tax per 100 Kgs. of diesel fuel being 11.6 Swiss francs for transport undertakings as against a general rate of 48.90 francs.

8.14 The total tax relief to selected public transport undertakings in the above West European countries as compared with total taxes that would have been payable in 1964-65 had there been no tax relief, amounted to 59.77 per cent in Switzerland, 57.68 per cent in West Germany, 29.61 per cent in Belgium, 5.97 per cent in Austria and 4.70 per cent in Italy. The actual tax burden as percentage of net operating cost† ranged between 0.83 in Switzerland and 18.38 in France in 1965.

*Information is based on "Taxation of Public Transport Undertakings in various West European Countries" by Rolf Seggel, Director, Bremer Strassenbahn AG (Germany)—a comparative survey of the International Commission on Economic Policies in Transport of the International Union of Public Transport (UITP) Supplement to Paper No. 6 circulated at 38th International Congress of UITP.

†Total cost less depreciation, interest on borrowed capital, insurance, taxes, licensing charges or road-use payments.

8.15 It may be added that U.K. Government* have decided to give a rebate of 1s 7d on the fuel duty to operators of State Bus Services with effect from 1st January 1969. This is following the representation made repeatedly by bus operators that fuel duty represents a heavy burden on bus services.

Conclusion

8.16 Public transport undertakings have to operate services according to set standards of safety, continuity, regularity and capacity, and keep pace with technical progress. They have to operate even on unprofitable routes and at fares fixed by authority, contrary to the commercial interests of the undertakings. The undertakings are also required to offer concessions in fares to students etc. In other words, profitability considerations have to be eschewed in public interest. It is, therefore, not unreasonable for transport undertakings to expect relief from public taxes in view of their public service functions and the considerable general interest in low fares. The tax policy in regard to metropolitan transport services needs to be reviewed, especially because these undertakings have been operating at a considerable loss for many years.

8.17 In view of the losses incurred by the city services, some of the State Governments have levied lower rates of taxes on passenger vehicles plying in municipal areas. As mentioned earlier, the Government of Tamil Nadu levies lower rates on city services and, while they have raised the rates of motor vehicle taxes for mofussil services recently, they have not enhanced the rates for city services. The Government of Maharashtra also gives a rebate of one-third on the motor vehicle tax in the case of buses plying in municipal areas. That Government also levies passenger tax at only 5 per cent as against 20 per cent for mofussil services. We recommend that the principle of lower rates of tax for city services should be accepted by the Central and all State Governments concerned in view of the difficult financial position of the city transport undertakings. We further recommend that the rates of taxes levied by the Governments on passenger vehicles plying in metropolitan areas should not be raised further.

*White paper on Public Transport and Traffic—December 1967.



सत्यमेव जयते

ANNEXURE I

Rates of Motor Vehicle Tax levied in Metropolitan Areas of Delhi, Bombay, Calcutta and Madras

	1964-65	1970-71
D.T.U.	Rs. 400 for 18 seats plus Rs. 60 for every additional seat, subject to the maximum of Rs. 2200.	Rs. 500 for 18 seats plus Rs. 75 for every additional seat, subject to the maximum of Rs. 2750.
B.E.S.T.	<p>(i) For 1st four passengers at Rs. 60 each. Every additional passenger at Rs. 44 each.</p> <p>(ii) (a) Standees 25 per cent of seating capacity—Tax at 25 per cent.</p> <p>(b) Standees exceeding 25 per cent of seating capacity—Full tax.</p> <p>(iii) Two-third rates for vehicles within Municipal areas.</p> <p>(iv) Diesel vehicles will have to pay surcharge of 50 per cent in addition, subject to the maximum of Rs. 530.</p>	<p>(i) For 1st four passengers at Rs. 60 each. Every additional passenger at Rs. 55 each.</p> <p>(ii) (a) Standees upto 25 per cent of seating capacity—Tax at 25 per cent.</p> <p>(b) Standees exceeding 25 per cent of seating capacity—Full tax.</p> <p>(iii) Two-third rates for vehicles within Municipal areas.</p> <p>(iv) Diesel vehicles will have to pay surcharge of 50 per cent, in addition, subject to the maximum of Rs. 530.</p>
C.S.T.C.	Rs. 1980 for 33 seats plus Rs. 30 for every additional seat.	No change.
M.S.T.D.	<p>For every seated passenger and where the total distance permitted to be covered by a vehicle in a day</p> <p>(i) Does not exceed 210 Kms. Rs. 28 per seat per quarter.</p> <p>(ii) Exceeds 210 Kms. but does not exceed 270 Kms. Rs. 33 per seat per quarter.</p> <p>(iii) Exceeds 270 Kms. Rs. 38 per seat per quarter.</p> <p>(iv) Standees. Rs. 5.69 per standee per quarter.</p>	No change.

ANNEXURE II

*Statement showing Yearly Incidence of Central Taxes
on a 52-Seater Bus*

(a)	Import duty on component parts imported for assembly of the chassis engine=Rs. 3249 spread over an assumed life of 8 years comes to=Rs. $3249 \div 8$ =Rs. 406	=Rs. 406
(b)	Excise duty of Rs. 5340 on chassis (including tyres etc.) spread over a period of 8 years=Rs. 667	=Rs. 667
(c)]	Inter-state sales tax of Rs. 1542 on chassis spread over a period of 8 years	=Rs. 193
(d)	Central excise on tyres (and tubes) at 72% <i>Ad Valorem</i> (60% of basic excise+20% S.E.D.) Rs. $5724 \div 72\%$	=Rs. 4122
(e)	Excise duty on H.S. Diesel Oil at 56 paise per litre leviable on annual consumption of 63000 Kms. $63000 \div 3.17$ =19874 litres	=Rs. 11019
	Total	Rs. 16,407



NOTE: In calculating the tax burden, the annual vehicle kilometrage is assumed to be 63,000 kms. and the life of a vehicle as 8 years. The life of the set of 8 tyres is assumed to be 63,000 Kms. which according to the assumption is one year. The basic price of 8 tyres at Rs. 650 of each works out to Rs. 5,724. The consumption of fuel is assumed to be 3.17 kms. per litre.

CHAPTER IX

ORGANISATIONAL AND FINANCIAL STRUCTURE

THE organisational structure of public transport undertakings is of vital importance for their sound and efficient working. At present the BEST and the DTU are managed departmentally by the respective Municipal Corporations through their statutory Transport Committees. The Calcutta State Transport Corporation is a statutory body set up under the Road Transport Corporation Act, 1950. The road transport services in Madras City are provided departmentally as a part of the Tamil Nadu State Transport Department.

9.2 In case of the Bombay Electric Supply and Transport Undertaking, the BEST Committee of Bombay Municipal Corporation and in case of Delhi Transport Undertaking the Transport Committee of the Delhi Municipal Corporation is the principal authority for the management of the Undertaking. The Delhi Municipal Corporation Act provides that it shall be the general duty of the Transport Committee to take steps from time to time for providing or securing or promoting the provision of an efficient, adequate, economical and properly coordinated system of road transport services. In carrying out the above objectives, the General Manager is required to act as far as possible on business principles. Under the Act, he has been given the powers to prepare schemes for starting new transport services or augmenting the existing road transport services, but the final decision rests with the Municipal Corporation and he has to seek advice of the Transport Committee before placing it for approval of the Municipal Corporation. The decision regarding the changes in the fare structure also rests with the Transport Committee with the approval of the Corporation. There are other subsidiary provisions which empower only the Transport Committee to purchase rolling stock, plant, equipment and any other item required for the efficient operation of the Undertaking and to dispose of scrapped vehicles, old tyres, used oil and any other stores of scrap value. The Bombay Municipal Corporation Act also contains similar provisions.

9.3 The organisational set up of the undertakings managed by the Municipal Corporations, has the following short-comings:

- (i) As the powers given to the General Managers are limited, in several matters approval of the Municipal

Corporation or the Transport Committee has to be obtained. Such practice delays many of the decisions even on routine matters, such as location of bus stops, alteration in bus routes, appointments of personnel, purchase of stores etc.

- (ii) The budget of the Undertaking is a part of the total budget of the Corporation, and has to be approved by (a) Standing Committee and (b) the Municipal Corporation. This involves several bugetary and accounting difficulties for the Undertaking which should normally be maintained on a commercial basis. No budget commitments therefore, can be made for more than one year without reference to the Municipal Corporation. In case of BEST the financial planning of the Undertaking is linked up with the financial planning of the Bombay Municipal Corporation, which in turn, depends on its share of public loans from the total share of the State in the Five Year Plans.
- (iii) The General Manager is not even full-fledged member of Transport, Committee which is responsible for making all major decisions for the Undertaking on capital procurements, long range planning etc.
- (iv) In case of the BEST, recruitment to posts carrying pay scales above Rs. 500 has to be done through the Public Service Commission whereas in DTU all posts carrying a minimum salary of more than Rs. 350 per month have to be referred to the Union Public Service Commission under the Act. For an Undertaking which has to run on modern management lines, this procedure involves undue delays. It also restricts the management from choosing the right people at the right time and from giving appropriate emoluments or promotions based on merits.
- (v) The Undertaking cannot avail the facility of loans from banking institutions like the Industrial Development Bank as this facility is available only to those set up under the Road Transport Corporation Act, 1950. The D.T.U. is also having difficulty in getting loan from Banks for its working capital.

9.4 It will thus be seen that the present organisational structure of the BEST and DTU is not a satisfactory arrangement for efficient running of the Undertakings. The Working Group, therefore, recommends that the present organisational set-up should be replaced by a Statutory Corporation to exercise the

necessary supervision, management and control. This could be followed by other city transport undertakings also, e.g. Ahmedabad Municipal Transport Service. This would be in keeping with the general policy of the Government of India that passenger road transport services should be run through Corporations in the interest of efficiency and continuity of growth and expansion. Corporations have greater autonomy in the management and operation of commercial services, in the use of internal resources and in mobilising resources for future development than what obtains in the case of departmental undertakings. We further recommend that the Board of Directors of the Corporation should be appointed strictly on the basis of skills and experience useful to a transport undertaking and should be capable of reviewing operations and recommending improvements.

9.5 In a Corporation form of organisation, it is expected that there would be one Chief Executive. He may be called Chairman or the General Manager who would be directly responsible to the Board of Directors. The Chief Executive should be a person responsible for management of the Corporation at the top level and should be a member of the Board of Directors. He should be actively assisted by at least three heads of departments like Administration, Finance & Accounts and Engineering. This group of four may be treated as the top management group with the Board of Directors acting as supervisory management.

9.6 It is useful to conduct management through proper delegation of responsibility with consequential authority. The Working Group recommends that there should be larger delegation of powers for the Chief Executive and other managerial staff so as to ensure optimum performance. Even pending the formation of Corporation, it is necessary to delegate more powers to the General Managers of the Undertakings.

9.7 There have been frequent changes in the post of General Manager/Director of the Undertakings. For instance in case of DTU there have been more than five changes in the post of General Manager during the last 12 years although under the Delhi Municipal Corporation Act the tenure of a General Manager is normally for five years. In Madras too, no Director continued in his post for more than a year during the last three years. Short-term top appointments eliminate the possibility of development of unified management, direction and practices. We strongly urge upon the concerned authorities that frequent changes in top management personnel should be avoided.

9.8 It would be helpful to appoint a Planning Group of competent people in the undertaking to make necessary studies

to improve the efficiency of the service, develop projects to this end and work with the operating departments to carry them out. This group should assist the General Manager in planning improvement of the projects and should report to him regularly.

9.9 The transport undertaking also needs a special group to make cost studies with a view to achieving economies in all departments. It would be of advantage to have costing personnel in the various depots so that performance of a depot or maintenance/operations unit can be compared with one another.

Financial Structure

9.10 The city transport undertakings have the statutory duty to provide adequate as well as economical service to the public. It is, however, not easy for them to reconcile these obligations. The public transport in urban areas by its very nature is relatively more costly as compared to services running on long distance routes due *inter alia*, to low operating speed on account of traffic congestion, multiplicity of bus stops, extra fuel consumption and increased wear and tear of vehicles due to frequent acceleration and deceleration. At the same time the kilometres done per bus per day in the case of city undertakings is less. At present it varies from 155* in case of CSTC to 182 Kms. in the case of DTU and 210 Kms. in case of BEST whereas a long distance bus of the Maharashtra State Road Transport Corporation does nearly 235 Kms. per day. Besides, the city transport undertakings are obliged to run their services on routes which are mostly uneconomic in order to serve the needs of the public—nearly 62 per cent of BEST routes are uneconomic whereas in Delhi almost all routes are uneconomic. There is also the main problem of meeting peak hour demand of commuters. In this connection the undertakings are obliged to maintain a large fleet of buses for peak hours use in order to reduce the waiting time of the commuters. This leads to a large number of buses being idle during off peak hours causing loss of revenue. During the last few years the gap between income and expenditure of city transport undertakings has widened considerably. The extent of losses incurred by the CSTC, BEST and DTU in 1969-70 alone amount to Rs. 355 lakhs, Rs. 155 lakhs and Rs. 242 lakhs respectively with the result that their ways and means position has considerably deteriorated. The undertakings have not been able to increase the fares since 1964-65 and thus are facing immense difficulties in managing their day to day affairs.

*This figure relates to 1967-68.

9.11 In view of the severe financial difficulties the Undertakings have not been able to augment their fleet to meet the growing travel demand. The cost of the fleet augmentation programme of the transport undertakings as given in Chapter VII, would involve large capital outlays. It is obvious that public transport in metropolitan cities, cannot be expected to play the necessary role without financial support. City road transport is an essential public utility service and consideration has to be given to the social benefits which accrue to the community by way of savings in journey time as well as in the waiting time. We are convinced that difficulties of the undertakings are not likely to be overcome by anything short of a complete change in their financial structure. As earlier recommended, the city transport undertakings in Bombay, Delhi and Madras should be converted into statutory bodies under the Road Transport Corporation Act, 1950 with sound capital base.

9.12 We further recommend that capital contribution to the city transport Undertakings should be in the form of share capital. At present the capital contribution made by the Governments to the city undertakings is a 'misnomer'. It is really a loan advanced to the undertaking repayable within a fixed period and carrying 6 to 7 per cent rate of interest. We are of the view that each of the city transport undertakings under Corporation structure like any other joint stock company should have a share capital base. This is permissible under Road Transport Corporation Act. On the pattern of Transport Corporations operating in mofussil areas, the city undertakings should also have involvement of the Central and State Governments. At present the Central and State Governments' contribution to the capital of State Road Transport Corporations through the Railway Board is in the ratio of 1:2. The same ratio can be adopted in the case of city undertakings if they are converted into Corporations and the contributions by the Central Government made through the Ministry of Shipping and Transport. A beginning in this regard can be made with Calcutta where a Corporation is already running city road transport services.

9.13 As regards the loans so far advanced to the undertakings these should be treated as share capital contribution and should not carry interest. If, however, the undertaking is able to make profit, a dividend can be declared. The Undertakings on their part would be expected to charge depreciation to revenue account as provided under Section 29 of the Road Transport Corporation Act 1950 and thus be in a position to replace the overage buses out of their own revenues.

9.14 We feel that the undertakings should try to conduct their business so as to make certain that their revenue is not less than sufficient for meeting all charges which are normally chargeable to revenue, such as (a) operating or running charges—fuel, oil and lubricants; (b) repairs/maintenance charges, including replacement of spares, tyres and tubes; (c) standing charges consisting of depreciation, insurance and taxes, pay, and allowances of operating staff; and (d) overhead expenses pertaining to administration, office and contingent. Once the share capital is provided by the Central and State Governments, present heavy debt charges including interest which are debited to revenue will be substantially reduced. In other words, it should be possible for the undertaking at least to cover the operating expenses.

9.15 The Working Group also recommends that the undertakings should have freedom to determine their fares to meet at least the increases in operating expenses which may be beyond their control. The arbitrary intervention of authorities in the general level of fares should be discouraged. The users should in general be expected to pay the revenue cost of the services provided for them. The management on its part should ensure that the undertaking is run efficiently and economically.



CHAPTER X

OPERATIONAL EFFICIENCY MEASURES

OPERATIONAL efficiency represents one of the most important elements of the successful operation of city undertakings. Before, however, one can recommend measures for improvement of operational efficiency a detailed study of each individual undertaking is imperative. We understand that a Study Group of the Association of State Road Transport Undertakings is already making a detailed study of the variations in the operational efficiency and performance of the City Transport Undertakings in the country with a view to laying down standards and norms for achievement and suggesting measures to achieve them. The Report of this Study Group is expected to be finalised shortly. We are, however, listing below various measures which should be adopted by the Undertakings to improve their operational efficiency:

- (i) **Scientific Inventory Management**—This is necessary (a) to minimise vehicle detention in the workshop by non-availability of spare parts and thereby help maximise fleet utilization rate and (b) to keep down capital investment in inventories, inventory carrying cost and obsolescence losses.
- (ii) **Rationalisation and streamlining of purchase procedures** in order to reduce administrative lead time which at present is abnormally long in certain cases. The introduction of simplified procedures to locate and define control points is bound to reduce the administrative lead time.
- (iii) **Proper quality control and inspection of the materials purchased.**
- (iv) **Introduction of reporting system to the Top Management for timely action**—Periodical reports on matters such as consumption of costly items in terms of value and quantity, stock position of such items, categorywise inventory position in relation to consumption, operational aspects etc. should be made available to the General Manager for his information and timely action.
- (v) **Provision of adequate workshop facilities for reducing the number of vehicles lying idle for want of repairs to**

the minimum. These may include preventive maintenance, unit replacement scheme, maintenance programming of vehicles and tyres, extensive retrieval process for maximum utilization of spare parts, tyres etc.

- (vi) Provision of Depots, sub-depots, bus stations etc. at proper places in order to reduce dead mileage.
- (vii) Route Planning on scientific basis in order to bring about a closer correspondence between the deployment of the total fleet and the varying passenger pressure on different routes. As public transport forms an integral part of the overall planning of the metropolitan functions there should be full coordination among the city planners and Transport Undertakings.
- (viii) Optimisation of the Scheduling of buses—As far as possible, the services should be arranged in the most economical manner, keeping the idle or waste kilometrage to the barest minimum and avoiding, to the extent possible, empty trips even by the diversion of vehicles from one route to another, if necessary. In some cases, the operation of circular routes may be considered as a likely solution. In some of the more advanced countries, route planning as well as scheduling of services is undertaken with the help of computers. Here also, the city transport Undertakings should consider scientific processing of data to obtain optimum results.
- (ix) Development of training facilities for advancing new skills relating to maintenance, standardization, purchase and inventory control, work and method study, budgetary control etc.
- (x) Greater stress on the vital aspect of recruitment, training and employment of drivers and also promotion of safety consciousness among them to prevent accidents.
- (xi) Introduction of some sort of bonus schemes to discourage high rate of absenteeism amongst the workers.
- (xii) Plugging of leakage of revenue—The leakage in daily earnings varies approximately from 8 to 15 per cent. Ways and means should be found to check the leakage with greater alertness on the part of the supervisory staff. Arrangements for advance booking should be intensified on the routes over which passengers load is high. According to Morarka Commission the DTU alone could increase its revenue by Rs. 50 lakhs per year by reduction in ticketless travel.

Traffic Congestion

10.2 The improvement in operational efficiency in the case of city undertakings is not only related to the internal efforts of the undertakings but it also depends on various measures required to be undertaken by other authorities, like the Railways, Municipal Bodies and Town Planning Authorities. One of the important aspects is reduction in traffic congestion which apart from causing delays in the movement of passengers, increases wear and tear of vehicles and fuel consumption, and reduces the operating speed. The average speed of buses in metropolitan cities varies from 13 to 16 Kms. per hour in the C.B.D. This results in increased cost of operation. Roughly an increase in speed by 1.6 Kms. per hour can reduce the operational cost to the extent of about 10 per cent. The Metropolitan Transport Team in its Interim Report* have already dealt with in detail the question of removing severe bottlenecks such as, level crossings, faulty inter-sections etc. in the existing circulation system and have recommended traffic operation measures to ensure free flow of traffic in the four metropolitan cities.

10.3 The Working Group would stress that the highest priority should be given to replacement of level crossings by overbridges or subways. Existence of level crossings causes dislocation in rail as well as road traffic. Studies made by the Madras Highway Research Station of a particular level crossing indicated that delay due to the crossing was about 24 per cent of the journey time during peak hours. Similarly there is need for elimination of pedestrian crossings by constructing subways to help quicker movement of vehicular traffic at busy roads and inter-sections. Case studies made for estimating the cost-benefit ratios of such projects have established that costs have been repaid in a few years by the monetary equivalents of the time saved in vehicle operation at such spots.†

10.4 The measures taken so far to spread the peak period traffic through staggering office hours have proved inadequate. The Working Group, therefore, recommends that priority should

*Traffic & Transportation Problems in Metropolitan Cities—Interim Report.

†To cite a few examples in Madras, the benefits due to the construction of the pedestrian subway opposite the Central Station estimated by Highways Research Station was Rs. 1.98 lakhs per year as against the capital cost of Rs. 4.40 lakhs. Similarly, prior to the construction of the subway at Round Thana, the delay caused to vehicles during peak-hours alone would have resulted in a total loss of 32.24 vehicle hours and 179.06 man hours. The net monetary benefit was worked out at Rs. 2.68 lakhs per year against the capital cost of Rs. 12.00 lakhs for the construction of sub-way.

be given to explore the possibility of further staggering working hours for Government offices as well as educational institutions and commercial establishments, if necessary on statutory basis.

10.5 Besides, the Working Group is of the view that the tendency towards urban concentration must be effectively restricted. Traffic cannot be minimised as long as work centres are centralised and land use in the central area is intensified. It is, therefore, urgently necessary to regulate demand for transportation through better control over land use. In this connection the Working Group would reiterate the observations made by the Metropolitan Transport Team in its Interim Report as well as in the Report on Existing Mass Transportation System in Bombay that intensive commercial development of Backbay Reclamation area in the southern part of the Bombay Island will give rise to the enormous additional traffic in the C.B.D. which is already severely congested. The Working Group hopes that the State Government would stop further reclamation of the Area as the Railways and the BEST are much concerned with this development.



CHAPTER XI

UNDERTAKING OF THE CALCUTTA TRAMWAYS COMPANY LTD.

THE Calcutta Tramway Company was registered in London in 1880 and the first electric tram line was introduced in Calcutta in 1902. The Company was managed by the Board of Directors in London through its local Agent. The management was taken over by the Government of West Bengal in July 1967 as the Company had not been managing its affairs properly and had declared its inability to pay the wages of workers for June 1967. The State Government has since appointed a whole time Administrator to manage the Undertaking.

11.2 The Tramways provide cheap mass transportation facilities in the busiest and the most densely populated parts of Calcutta. The principal points served are the Esplanade for the north-south travel and the Howrah station for the east-west trans-river travel. The other important transfer points are Dalhousie Square, Sealdah station, the 5-point crossing at Sham Bazar, Wellington Square and Mominpur junction. It operates on 26 routes covering 68 kms. of double tracks.

11.3 The Tramways carried 10.8 lakh passengers per day in 1963. Since then there has been almost continuous fall in the number of passengers. The main reason for decrease in the number of passengers is due to steady fall in the operational efficiency resulting in lesser number of tram cars being put in service. Table 1 gives the number of trams put on road and passengers carried daily since 1961.

TABLE I

Year	Average number of Tram cars run per day	Average number of passengers carried per day	Average number of passengers per car per day
1961	413	1034,000	2504
1962	408	1044,000	2559
1963	406	1075,000	2648
1964	396	1003,000	2533
1965	390	982,000	2491
1966	383	998,000	2609
1967	375	884,000	2357
1968	337	886,000	2629
1969	338	727,000	2152

11.4 The above statistics do not reflect the true demand for tram services. Observations made during peak hours have revealed that as many as 250 passengers travel in a tram car whereas average capacity of a double unit tram car varies from 187 to 200 only. The continuous fall in the fleet utilisation ratio has further aggravated the problem of overcrowding. According to the Undertaking the fall in the number of passengers is also due to disparity in fare structure between the Tramways and the buses resulting from increase in tram fares in 1969 and the bus fares remaining unchanged.

Fleet utilisation

11.5 Due to continued negligence in the maintenance over a long period, the tram tracks have reached the state of disrepair, resulting in fall in tram car utilisation ratio as is evident from Table 2.

TABLE 2

Year	Fleet Strength	Average number of trams in service daily	Tram utilisation ratio (per cent)
1961	470	413	87.9
1962	470	408	86.8
1963	470	406	86.4
1964	470	396	84.3
1965	470	390	83.0
1966	471	383	81.3
1967	474	375	79.1
1968	476	337	70.8
1969	476	338	71.0

Breakdowns

11.6 Frequent breakdowns have resulted in increased detention, reduced tram utilisation ratio and increased missed kilometres. The following table shows the rate of breakdowns and the extent of daily missed kilometres since 1961.

TABLE 3

Year	Average number of breakdowns per 10,000 Kms.	Daily average missed kilo- metres
1961	1.8	4909
1962	1.8	5799
1963	1.8	7603
1964	2.4	11924
1965	2.9	12212
1966	2.6	15217
1967	2.2	18662
1968	1.9	22101
1969	2.5	22167

Waterlogging

11.7 Waterlogging in Calcutta is a recurring phenomenon which periodically puts a number of trams out of commission. In August, 1969 on a single day, due to heavy rain and flood, as many as 25 tram cars were stranded in water, causing heavy damage to traction motors. In June, 1970 on a particular day 32 tram cars were stranded in water.

Stockouts of Spare Parts

11.8 The number of trams held up for want of spares has been rising from year to year. The Tramways Company find it difficult to get import licence to procure some essential materials and components, like traction motors, insulated copper wire, switches, rails, tyres etc., which are not manufactured in the country. Substitutes for a few items which are available in the country are more expensive and their quality is often below standard.

Derailment

11.9 The derailment of trams had increased from 304 in 1963 to 2403 in 1969. This is due to the heavy wear and tear of the tracks as well as the inability of the Tramways to procure

rolled steel tyres for a number of years which forced them to use cast steel tyres. Cases of flange-riding and derailments have gone out of bounds as is evident from Table 4.

TABLE 4

Year	Number of tram cars damaged due to defects in tracks	Total number of derailments	Total hours lost
1963	311	304	179
1964	374	553	330
1965	448	513	336
1966	332	479	314
1967	402	835	467
1968	507	1224	510
1969	618	2403	1541

11.10 It may be added that out of 71 Kms. of double track, nearly half of the track needs renewal and about 11 Kms. overhauling. Out of 383 pair of points, 227 pairs require renewal. Of the 778 crossings, 242 need renewal. The percentage of renewal of points and number of crossings comes to 59.27 and 31.1 per cent respectively. Besides, there are pot-holes and depressions in the track. The poor condition of the tracks is directly responsible for damage of the tram cars, derailments causing loss of revenue and the slow turn-round of cars. It also leads to higher consumption of electricity specially when there is flange-riding.

11.11 The magnitude of backlog in renewal and overhauling of tracks has posed a serious problem for the smooth running of services. In view of the continued deteriorating condition of the Tramways the West Bengal Government appointed a Commission of Inquiry in 1967 to examine financial and operational aspects of the Calcutta Tramway Company. The Calcutta Tramways Inquiry Commission, in its Report (1968) had estimated that the backlog of repairs and maintenance, renewal and replacement of track, rolling stock, overhead equipment etc., will cost about Rs. 4 crores. The Commission had assessed that there

were arrears in the renewal and replacement of tram tracks to the extent of 28 Kms. of unreserved double track and 4.7 Kms. of reserved double track and in the renewal of 242 Nos. of crossings and 227 pairs of switches. The Commission had envisaged that during the next 5 years commencing from 1968 the renewal and replacement of tracks at the rate of 7.5 Kms. of double track (reserved and unreserved) and 60 pairs of switches and 64 Nos. of crossings will be taken up every year. However, during 1968 and 1969 only 5.9 Kms. of double track (reserved and unreserved) could be renewed and 9 pairs of switches and 25 Nos. of crossings could be changed due to paucity of funds and difficulty in procuring raw materials.

Financial Difficulties

11.12 The financial position of the Company has been deteriorating since 1967 due to increasing gap between its income and expenditure as will be seen in Table 5.

TABLE 5

(Rs. in lakhs)

Year	Income	Expenditure	Profit/ Loss
1965	345.99	323.60	+22.39
1966	342.41	323.99	+18.42
1967	296.13	348.93	—52.80
1968	325.16	400.96	—75.80
1969*	342.22	427.33	—85.11

*Estimated.

The continuous fall in passenger traffic has been mainly responsible for decrease in income.

11.13 The Tramways Inquiry Commission had gone into the question of economy in expenditure and found that the revenue of the Company derived from its existing rate of fares, was not sufficient even to meet the operational expenses. The Company's income was estimated at Rs. 350 lakhs per year. The expenditure on the other hand including the cost of backlog of repairs and maintenance both of the track and rolling stock, spread over a number of years, was placed at about Rs. 510

lakhs per year. Thus there was an annual gap of Rs. 160 lakhs between the income and expenditure.

11.14 Following the recommendations of the Inquiry Commission, the Government of West Bengal, keeping in view the deteriorating financial position and the need to preserve the well established and useful means of public transport system without which Calcutta cannot do for years to come, accepted the proposal of the Undertaking to reclassify the fare stages in the First and Second Class as below, with effect from January 2, 1969.

1st Class	2nd Class
15 p (upto 3 miles)	12 p (upto 3 miles)
20 p (above 3 miles)	15 p (above 3 miles)

Fares were further reclassified with effect from 1st April, 1969 as below:

1st Class	2nd Class
13 p (upto 3 miles)	10 p (upto 3 miles)
18 p (above 3 miles)	13 p (above 3 miles)

But there was no corresponding revision in the fare structure of the State and private buses. Uptill then, there was a certain parity between the fare structure of the First and Second class journeys by trams on the one hand, and the fares in buses on the other. When the tram fares were raised without a corresponding rise in the bus fares, there was consequently an immediate diversion of traffic from the tramways to the buses. In December, 1968 about 900,000 passengers were travelling daily by tramways. With the rise in tram fares and the subsequent diversion of passengers to buses the number of passengers travelling by trams fell at once to 650,000 daily and this could be increased to 770,000 only when the rise in the tram fares was scaled down by 2 paise with effect from 1st April, 1969. It was also seen that whereas before the rise in tram fares on 2nd January, 1969, the proportion of passengers between First class and Second class was 40:60, in April, 1969 it was 35:65 which still remains unchanged. The Second class fares had till then been below the bus fares for corresponding stages, but this parity was disturbed by the failure to increase the bus fares. According to the Undertaking it has been very difficult to get back the lost

NOTE : The Company issues monthly passes charging fares for 22 days. In addition students are being given concession at about 20 per cent of the reduced fare.

traffic, even after the partial reduction of tram fares with effect from 1-4-1969. As such they may not be in a position to regain their lost traffic substantially, unless the parity of fare structure is restored by a rise in the bus fares also, keeping the Second class tram fares somewhat below the bus fares for corresponding stages.

Ticketless Travel

11.15 Many passengers travel without tickets specially during the peak hours. Some of them are unable to purchase tickets due to overcrowding. It is estimated that the loss of revenue on this account is of the order of 10 per cent of gross daily collections and works out to Rs. 35 lakhs annually. With a view to fill this gap to some extent, the Undertaking introduced PAYE CARS—'Pay As You Enter Cars'. The idea was that this system would stop evasion of fares, which was considerably high during the peak periods. Initially, with closer supervision better results were produced. As it was not possible to continue with such strict supervision month after month it was withdrawn partially. Passengers were expected to follow the rules of boarding and alighting through the entrance and exit gates respectively, but that expectation had been belied. Many passengers were found to board these cars through exit gates to avoid payment of fares. In spite of the employment of supervisory staff things have gone out of control, particularly with the conductor immobilised in the cabin. Moreover, many passengers travel longer stages against fares paid for shorter stages. The Undertaking has therefore, decided not to build this type of cars in future.

Programme for Improvement

11.16 The Tramways Inquiry Commission in its report has observed that "even though the tramways would become obsolete and will have to be replaced by more modern modes of transportation, for at least a decade tramways will have to be continued in meeting the transport requirement of the city." On the basis of recommendations made by the Tramways Inquiry Commission a Five Year Renewal Programme (1970-75) costing about Rs. 5 crores for maintenance of tracks, rolling stock, overhead installations etc. has been drawn up by the Undertaking. A provision of Rs. 1 crore has already been made in the 4th Plan (1969-74) of West Bengal for renewal and replacement of tracks. It is, therefore, recommended that an additional amount of Rs. 3 crores should be provided for implementation of the above renewal programme during the Fourth Plan.

11.17 The details of the improvement programme for the first two years (1970-72) are given below:

(i) *Tracks.* The re-alignment of the tracks on reservations will considerably improve the operational efficiency of the Tramways. The total cost of such re-alignment projects will be Rs. 49.50 lakhs spread over a period of 2 years.

(ii) *Over-head and sub-station equipment.* If the replacement of 14 old Rotary Convertors in sub-stations by Silicon Rectifiers is carried out, it will result in a saving of 10 to 12 per cent in consumption of electricity. Such replacement will cost Rs. 6.42 lakhs. To achieve this change-over, it is necessary to replace 46 Nos. slow speed circuit breakers of different sizes with high speed ones. These are to be imported from U.K. The foreign exchange (in sterling) required will amount to Rs. 1.78 lakhs during 1970-71 for 21 Nos. and Rs. 2.35 lakhs during 1971-72 for 25 Nos. circuit breakers. In addition an amount of Rs. 18.8 lakhs is required for renewal of trolley wire, cable and sundry equipment and replacement of one transformer and other auxiliary equipment for A.C. supply in Nonapukur Workshop.

(iii) *Rolling Stock* (a) *Renovation of Tram Cars*—There is a fleet of 476 cars of which 338 are effective. The remaining cars are held up for repairs and rebuilding. It is absolutely necessary to renovate 150 cars during 1970-72 at a cost of Rs. 16 lakhs. The Tramways have also 15 burnt and laid up cars which require rebuilding. This will cost Rs. 7 lakhs.

(b) *Traction Motors.* The Tramway Undertaking have at present a total of 1131 traction motors. About 80 per cent of these are overaged. The rated life of traction motors is 30 years only. However, 50 per cent of the traction motors are over 50 years old. The immediate requirement is to replace 250 traction motors. The total cost for such replacements works out to be Rs. 109 lakhs spread over 1970-72. Although the undertaking have placed order for 125 Nos. of 40 H.P. traction motors with a Hungarian firm, it will be very difficult to undertake sustained replacement of 1131 motors of 40 H.P. and 60 H.P. over a phased programme. The Heavy Electricals Ltd., Bhopal should be persuaded to take up the manufacture of the motors required by the Tramways.

(c) *Service Vehicles and Workshop Machinery.* An amount of Rs. 15.15 lakhs will be required for replacement of service vehicles and workshop machinery.

11.18 Thus the total requirement of funds for the above schemes during the years 1970-72 will be as follows:

1. Renewal & Replacement of Tracks for re-alignment job only	Rs. 49.50 lakhs
2. Overhead & Sub-station equipment	Rs. 29.35 „
3. Rolling Stock—including replacement of 125 Nos. (40 H.P.) and 100 Nos (60 H.P.) Traction Motors	Rs. 147.15 „
	<u>Rs. 226.00 „</u>

It is understood that a sum of only Rs. 10 lakhs has been provided in the Annual Plan for 1970-71. The Working Group recommends that the plan provision for the current year should be suitably enhanced so as to make available Rs. 226.00 lakhs during the years 1970-71 and 1971-72.

Foreign Exchange

11.19 The Tramway Undertaking will need special allotment of foreign exchange for imports of switch points, grooved rails, traction motors and circuit breakers amounting to Rs. 123.63 lakhs (which include Rs. 109 lakhs in rupee currency) during 1970-72 as per details below:

	1970-71	1971-72	Remarks
1. Switch points, Grooved rails for crossings and curves	5.00 lakhs	5.50 lakhs	(in D.M.)
2. Traction motors	35.00 lakhs	74.00 lakhs	(in rupee currency)
3. Circuit breakers	1.78 lakhs	2.35 lakhs	(in sterling)
	<u>41.78 lakhs</u>	<u>81.85 lakhs</u>	

It is recommended that *ad hoc* allocation of foreign exchange for Rs. 123.63 lakhs should be made to the Undertaking to meet its requirements.

11.20 Increasing foreign exchange difficulties have forced the Undertaking in recent years to use locally made soft cast steel tyres in place of rolled steel tyres. The soft cast steel tyres cost four times more than the rolled steel tyres—i.e. Rs. 13 lakhs per annum instead of Rs. 3.5 lakhs. Moreover, their life is only 13 months (against 43 months for rolled steel tyres) and

they have to be skimmed every three months. Further the capacity of the workshops to skim the soft cast steel tyres is not adequate. As a result, additional 20 to 30 cars per day are being detained in the wheel shop causing a loss of revenue to about Rs. 1.5 lakhs per month.

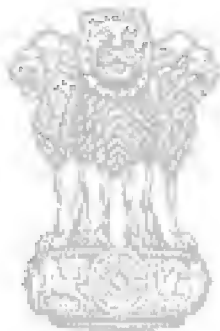
11.21 Tram cars use three sizes of steel tyres viz. 22", 28" and 33". TISCO used to roll 28" and 33" steel tyres for the Company up to 1957, while 22" tyres had always to be imported. Since Railways have booked the entire rolling capacity of the TISCO, the supply of tyres to the Undertaking through this source has ceased. It is, therefore, suggested that the Railways should allow the TISCO to resume rolling of these tyres for the Undertaking. In case it is not feasible, the Working Group recommends that foreign exchange amounting to Rs. 4 lakhs per annum for import of steel tyres should be allocated to the Undertaking.

11.22 The Undertaking is unable to get grooved rails causing heavy financial loss and increased cost for renewal programme. Because of its inability to import grooved rails, the Undertaking is using mild steel checks fitted to straight rails. This has increased the renewal cost by about 50 per cent. The requirement of grooved rails will be of the order of about 1200 tonnes per annum for the next five years and thereafter 600 tonnes per annum for normal replacement. The Hindustan Steel Plant at Bhilai may be persuaded to take up this order. The Undertaking should be helped in the production and supply of these essential parts and equipment to avoid taking recourse to inferior and costly substitutes which increase the cost of renewal and operation greatly.

11.23 The Tramways have to pay Rs. 4 lakhs per month for consumption of electricity. Under the provision of a Statute the Railways are exempted from the payment of electricity duty. Although the Tramways come under the definition of Railways, they have not been exempted from the duty. The Working Group suggests that the State Government should consider exempting the Tramway Undertaking from payment of electricity duty on the pattern of Railways.

11.24 The tariff structure for electricity supply is being governed by successive agreements with Calcutta Electricity Supply Corporation. Upto January, 1950 the Tramways were given the benefit of a sliding scale in accordance with the summated consumption of units. Under the new agreement of 1950 executed just prior to the enactment of Calcutta Tramways

Act 1951, the Undertaking has been given a flat rate and thus deprived of getting the advantage of summated maximum demand on the ground that it received supply through eleven sub-stations owned and operated by it. The Working Group is of the view that the Agreement with Calcutta Electricity Supply Corporation may be re-examined with a view to determining a reasonable tariff structure for the Tramways.



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CHAPTER XII

SUBURBAN RAILWAY SERVICES

THE Railways constitute the most expedient and effective means of mass transportation in the metropolitan areas. About 7.44 lakh commuters in Calcutta, 22 lakh in Bombay and 2.4 lakh in Madras are being carried daily by the suburban railways. The extent of suburban services provided by the railways in Calcutta, Bombay and Madras is described in the paragraphs that follow.

CALCUTTA

12.2 In Calcutta the suburban train services are run by the Eastern and the South Eastern Railways. The suburban railway section extends as far as Burdwan, Krishnagar city and Bongaon in the north, Kharagpur and Diamond Harbour and Port Canning in the south.

Eastern Railway

12.3 Electrification was introduced on the Eastern Railway in 1957. It has enabled the Railways to run its suburban trains into Sealdah during peak hours with a headway of 3 to 5 minutes. At Howrah the headway is even smaller.

12.4 The suburban train traffic at Sealdah and Howrah increased from 5.4 lakh passengers per day in 1961-62 to 6.6 lakh passengers per day during 1969-70. To meet the growing demand of the passengers the Eastern Railway have been increasing the number of suburban trains. Table 1 shows the growth of passenger traffic and the number of trains run per day on the Eastern Railway since 1961-62.

TABLE 1

Year	Passengers		Passenger Kilometres		Passenger Trains	
	No. in thousands per day	Per cent increase over 1961-62	No. in thousands per day	Per cent increase over 1961-62	No. of trains run per day	Per cent increase over 1961-62
1961-62	544	..	12433	..	409	..
1962-63	567	4.2	12679	2.0	416	1.7
1963-64	582	7.0	12803	3.0	409	..
1964-65	620	14.0	14397	15.8	412	0.7

Year	Passengers		Passenger Kilometres		Passenger trains	
	No. in thousands per day	Per cent increase over 1961-62	No. in thousands per day	Per cent increase over 1961-62	No. of trains run per day	Per cent increase over 1961-62
1965-66	632	16.2	14496	16.6	413	1.0
1966-67	635	16.7	14545	17.0	454	11.0
1967-68	635	16.7	14751	18.6	496	21.3
1968-69	671	23.3	16027	28.9	553	35.2
1969-70 (Prov.)	663	21.9	..	..	589	44.0

12.5 *Peak Period.* The peak period extends from 8-30 to 10-30 in the morning and from 4-30 to 7-30 in the evening. Table 2 gives the number of trains run during the peak period.

TABLE 2

Year	Morning Peak	Evening Peak
1961-62	48	53
1962-63	48	53
1963-64	49	54
1964-65	51	54
1965-66	52	56
1966-67	55	55
1967-68	57	60
1968-69	60	64
1969-70	62	64*

12.6 *E.M.U. Stock.* In 1968-69 the Eastern Railway had 563.7 coaches out of which 98.2* were motor coaches and

*The make-wise break up of the motor coaches is as follows :

Jessop	16
SIG	12
ICF/Hitachi (Bulk)	32
ICF/PROTO	2
AEI/PROTO	2
ICF/HEIL	32.2
	96.2
Spare	2.0

465.5 trailer coaches. The Eastern Railway had a programme for procurement of 588 coaches during the Third Five Year Plan against which the actual receipts were 312. During 1966-67 to 1968-69, 225 coaches were received. The Eastern Railway have a programme to procure 80 coaches during the Fourth Five Year Plan.

South Eastern Railway

12.7 The suburban services of the South Eastern Railway are being run on the Howrah-Kharagpur section. With the Electrification on this section in April 1968 the old steam stock is being gradually replaced by the EMU stock. The traffic on this section is not heavy.

12.8 *Growth of traffic.* The growth of traffic on the South Eastern Railway and the number of trains run daily are given in Table 3.

TABLE 3

Year	Passengers		Passenger Kilometres		Passenger Trains	
	No. in thousands per day	Per cent increase over 1961-62	No. in thousands per day	Per cent increase over 1961-62	No. of trains run per day	Per cent increase over 1961-62
1961-62	49.3	..	1507	..	30	..
1962-63	52.9	7.3	1616	7.3	30	..
1963-64	54.9	11.4	1679	11.5	30	..
1964-65	58.8	19.3	1732	14.9	30	..
1965-66	59.7	21.1	1723	14.4	30	..
1966-67	64.6	31.0	1726	14.5	32	6.7
1967-68	65.0	31.8	1792	18.9	38	26.7
1968-69	81.0	64.3	1882	24.9	55	83.3
1969-70 (Prov.)	80.6	63.5	..	..	60	100.0

It will be seen from the above table that the number of passengers carried per day increased by 63.5 per cent during 1961-62 to 1969-70 whereas the number of trains increased by 100.0 per cent.

12.9 *Peak Period.* The peak period is from 8-30 to 10-30 in the morning and between 4-30 to 7-30 in the evening. The number of trains run during the peak period is given in Table 4.

TABLE 4

Year	Number of Suburban trains	
	Morning Peak	Evening Peak
1961-62	8	8
1962-63	8	8
1963-64	8	8
1964-65	8	8
1965-66	8	8
1966-67	8	8
1967-68	8	8
1968-69	8	9
1969-70	8	11

12.10 *EMU Stock.* The South Eastern Railway at present have 29 units. Each Unit is comprised of 1 motor coach and 3 trailers. During the Third Plan the Railway had programmed for procurement of 35 motor coaches with 102 trailer coaches. However, no coaches were received by the railways during the period. During 1966-67 to 1969-70, 29 motor coaches and 87 trailer coaches were received.

BOMBAY

Central Railway

12.11 The Central Railway suburban system has been divided into three sections (i) Local Line; (ii) Harbour Branch line; and (iii) Raoli Junction-Kurla. From Kalyan, the section is extended to Karjat on the south-east and Kasara on the north-east. Karjat is about 100 Kms. from Bombay and Kasara about

120 Kms. The Harbour Branch is closely linked with Kurla, Chembur and Mankhurd. The development in these areas is taking place at a fast rate.

12.12 *Growth of Traffic.* The growth of passenger traffic on the Central Railway since 1961-62 and the number of trains run daily are given in Table 5.

TABLE 5

Year	Passengers		Passenger Kms.		Passenger Trains	
	No. in thousands per day	Per cent increase over 1961-62	No. in thousands per day	Per cent increase over 1961-62	No. of trains run per day	Per cent increase over 1961-62
1961-62	695.5	..	9277	..	609	..
1962-63	765.3	10.0	9918	6.9	649	6.6
1963-64	855.4	23.0	10762	16.0	657	7.9
1964-65	939.8	35.1	11932	28.6	681	11.8
1965-66	1012.7	45.6	14932	61.0	682	12.0
1966-67	1038.2	49.3	15546	67.6	690	13.3
1967-68	1074.3	54.5	16833	81.5	690	13.3
1968-69	1016.1	46.1	15945	71.9	664	9.0

The above table indicates that the suburban traffic increased by 72 per cent during the period 1961-62 to 1968-69, while the number of trains increased by only 9 per cent. The Central Railway have taken the following measures to increase the carrying capacity of the trains:

- Replacement of 4-car trains with 8-car trains on the Harbour Branch providing an increase of 100 per cent in capacity;
- Replacement of old coaches with new coaches providing 35 per cent more carrying capacity;
- Replacement of old 4-car shuttle with new 6-car shuttle on Kalyan-Kasara and Kalyan-Karjat Sections;
- Replacement of 8-car trains with 9-car trains on the main line; and

- (e) Extending the run of certain trains, such as from Kurla to Thana, Thana to Kalyan and Kalyan to destination beyond.

Despite the above measures the trains are over-crowded and during the peak period carry the crush load of 3000 passengers against the marked capacity of 1800 passengers.

12.13 *Peak Period.* Table 6 gives the number of trains run during the peak periods.

TABLE 6

Year	Morning Peak 8-30 to 11-00 hrs.	Evening Peak 17-00 to 19-00 hrs.
1961-62	49*	56
1962-63	50*	58
1963-64	54	58
1964-65	56	60
1965-66	56	59
1966-67	57	61
1967-68	57	61
1968-69	57	61

*Morning peak hours during 1961-63 were from 9 to 11 hours.

Thus the number of trains during peak hours has increased only marginally.

12.14 *EMU Stock.* The position of the EMU stock is not very satisfactory as obsolete stock of 1928 is still in use. The EMU stock holding as on 30-7-1970 with the Central Railways was 459 coaches out of which 104 coaches are of old type (1928) and were over due for replacement. It leads to frequent break-downs and cancellation of trains causing great inconvenience to the passengers.

The Central Railway had placed an order on M/s. Jessop & Co. for 94 EMU coaches during 1963-65. Out of this only 18 coaches have been received so far. During 1968-70 another order for 247 EMU coaches was placed on the Integral Coach

Factory. The delivery of these coaches is likely to commence from October, 1970. The Central Railway expect to receive only 137 coaches by August, 1972.

Western Railway

12.15 The Western Railway suburban service extends from Churchgate to Virar covering a distance of 60 Kms. There are 28 suburban stations—14 between Churchgate and Andheri, 4 between Andheri and Borivli spaced between 1.6 to 2.4 Kms. and 6 between Borivli and Virar, the maximum distance between two stations being 8.4 Kms.

Quadrupling of tracks has been done between Grant Road and Borivli stations. The sections between Churchgate and Grant Road and Borivli and Virar have at present double line tracks. The section between Churchgate and Grant Road is the real bottleneck as it carries the maximum commuter traffic. The quadrupling of this section which is now in progress is expected to be completed by 1972.

12.16 *Growth of Traffic.* The traffic on the Western Railway has also been increasing at a high rate. Table 7 gives the growth of passenger traffic and the number of trains run to carry them.

TABLE 7

Year	Passengers		Passenger Kms.		Passenger Trains	
	No. in thousands per day	Per cent increase over 1961-62	No. in thousands per day	Per cent increase over 1961-62	No. of trains run per day	Per cent increase over 1961-62
1961-62	742.8	..	10762	..	385	..
1962-63	765.0	3.0	10523	(—) 2.2	393	2.1
1963-64	870.2	17.2	11778	9.4	401	4.2
1964-65	925.0	24.5	12526	16.4	434	12.7
1965-66	976.3	31.4	13233	23.0	450	16.9
1966-67	1096.8	47.7	15332	42.5	469	21.8
1967-68	1103.2	48.5	15326	42.4	461	19.7
1968-69	1077.7	45.1	16156	50.1	461	19.7

It will be seen from the above table that compared with 1961-62 the traffic in 1968-69 has increased by 50 per cent and the number of trains run daily by about 20 per cent.

12.17 *Peak Period.* The morning peak is from 8-30 to 11-30 and evening peak from 5-00 to 7-30. The average number of trains run during the peak period is given in Table 8.

TABLE 8

Year	Morning Peak	Evening Peak
1961-62	38	38
1962-63	38	38
1963-64	38	38
1964-65	42	43
1965-66	47	45
1966-67	48	44
1967-68	54	44
1968-69	54	44

12.18 *EMU Stock.* The current holding of EMU stock with the Western Railway is 341 coaches which is comprised of 123 motor coaches, 212 trailer coaches and 6 special trailer coaches. The Western Railway had a programme for the procurement of 411 coaches for replacement of the 1928 stock and on additional account. They expect to receive them by 1971-72 which would enable them to introduce additional 10 trains in the morning as well as evening peak periods.

MADRAS

12.19 In Madras, the suburban train services are run by the Southern Railway which carry about 2.4 lakh passengers per day. The existing railway system serving the city consists of two broad-gauge lines (non-electrified)—Madras Central to Trivellore and Gummudipundi. The third broad-gauge link is between the Madras Central and the Beach Station. In addition, there is a metre-gauge suburban electrified section between Beach Station and Chingleput.

12.20 *Growth of Traffic.* The increase in the suburban traffic in Madras is indicated in Table 9.

TABLE 9

Year	Passengers		Passenger Kilometres	
	No. in thousands per day	Per cent increase over 1961-62	No. in thousands per day	Per cent increase over 1961-62
1961-62	181	..	2370	..
1962-63	190	4.9	2400	1.3
1963-64	206	8.3	2592	9.4
1964-65	213	17.1	2597	9.6
1965-66	223	23.2	2833	19.5
1966-67	256	41.3	3345	41.2
1967-68	257	42.0	3337	40.8
1968-69	224	23.7	3238	36.6
1969-70	245	35.4	..	..

The existing suburban train facilities are not adequate to meet the requirements of the commuters on the B.G. section with the result over-crowding occurs during peak hours. The frequency of trains on B.G. Section is 20 minutes whereas on M.G. it is 6 minutes.

RECOMMENDATIONS

12.21 The Metropolitan Transport Team has already examined in detail the working of the suburban railways in Calcutta and Bombay and suggested various measures for improving the services in its Reports.* The Railways have since initiated action on some of the major recommendations of the Metropolitan Transport Team. Necessary organisation in Calcutta and Bombay has been set up to carry out the studies recommended by the Team. The progress of these studies and the recommendations of the Working Group are given below:

- * (1) Report on Existing Mass Transportation System—Bombay.
- (2) Report on Mass Transportation System—Calcutta.

Calcutta

12.22 *Suburban Dispersal Line (SDL)*. According to the Railways the Final Location Survey and preparation of drawing reports for the SDL is expected to be completed by April, 1971 when the construction of the project could be taken in hand. It may be mentioned that the Planning Commission has already provided a sum of Rs. 30 crores in the Development Plan of the Railways during the Fourth Plan for the construction of the above line. The Working Group recommends that the Railways should complete the survey as early as possible.

12.23 *Rapid Transit System*. The Metropolitan Transport Project Organisation set up by the Railways in Calcutta has already initiated the Techno-Economic Feasibility Studies for the MRTS. According to the Railways the studies are expected to be completed by December, 1971. An amount of Rs. 3.4 crores has been provided in the Fourth Plan for the feasibility studies and preparation of project report and a token provision of Rs. 1 crore has been made for construction. The Working Group recommends that all possible efforts should be made to complete the studies and surveys for the MRTS in time and to commence construction on this project as early as possible.

Bombay

12.24 *Third Terminal at Ballard Estate*. The preliminary engineering feasibility study of the project is already under progress. It is expected that the study would be completed by December, 1970. The Working Group is of the view that the construction of the new terminal if found feasible would relieve the congestion on the existing two terminals (V.T. and Churchgate), as both the stations have almost reached their capacity limits. This would also help in easing the heavy traffic and congestion on roads near Churchgate inter-section, Bhagat Singh Road and Dada Bhai Naoroji Road. A provision of Rs. 7 crores for this project has been made in the Fourth plan.

12.25 *Rapid Transit System*. The Traffic Cell set up by the Government of Maharashtra for collection of essential data which is required to serve as a base for preparing a long-term transportation plan for the Bombay Metropolitan area, has submitted its Report to the Metropolitan Transport Team. The Report is under examination of the Team and as soon as the corridors for the Rapid Transit are finalised, the Railways would be in a position to undertake the Techno-Economic Feasibility Study for system selection. The Railways have already set up their organisation to carry out these studies in Bombay. A provision

of Rs. 4.4 crores for this project has already been made in the Fourth Plan.

Madras and Delhi

12.26 It may be mentioned that the traffic and transportation studies for preparing a long-term transportation plan were initiated by the Metropolitan Transport Team through the Town Planning and Highway Research Departments in Madras and the Central Road Research Institute in Delhi. It is expected that their Reports would be made available to the Metropolitan Transport Team by March, 1971. The Team would then finalise the corridors and give its report so as to enable the Railways to carry out the techno-economic feasibility studies for system selection for rapid transit system in Madras and Delhi, for which provision of Rs. 1.40 crores has been made in the Fourth Plan for each of the two cities. The Working Group feels that no time should be lost in finalising these studies.

EMU Stock

12.27 During the course of discussions the Group was given to understand that the Railways were greatly handicapped because of non-availability of EMU Stock. The Railways were still running old and obsolete stock of 1928, which led to frequent failure and breakdown of the services. M/s Jessop & Co. and the Integral Coach Factory with whom the orders were placed for Bombay for the supply of new stock had not supplied even a single coach to the Railways during 1966-69. Moreover, about 50 per cent of the EMU stock was imported after Independence and requires large scale repairs and replacement. Considerable foreign exchange is involved for importing parts for the replacement and rehabilitation of the present stock. According to the Railways the capacity available in the country for the Manufacture of AC EMU Stock is sufficient to meet the demand. As regards DC EMUs, the main factor limiting the indigenous capacity is the short supply of electrical equipment for the motor coaches which is manufactured by the Heavy Electricals Limited, Bhopal. The Railways have been requesting the HEL, to increase their production capacity as much as possible. The latest commitments made by the HEL for supply of electrical equipment is as indicated below:—

1969-70	18 sets	sufficient for 18 motor coaches and matching 36 trailer coaches.
1970-71	27 sets	sufficient for 27 motor coaches and matching 54 trailer coaches.

1971-72	30 sets	sufficient for 30 motor coaches and matching 60 trailer coaches.
1972-73 & thereafter	48 sets	sufficient for 48 motor coaches and matching 96 trailer coaches.

The maximum indigenous availability of DC EMU stock would, therefore, be 144 units per year by 1972-73 consisting of 48 motor coaches and 96 matching trailer coaches.

12.28 In view of the extreme shortage of DC EMU stock for use in the Bombay area, the Railway Board propose to meet the requirement of 30 to 40 sets of DC electrical equipment by import. This would permit manufacture and commissioning of 90/120 DC EMU coaches consisting of 30/40 motor coaches and 60/80 trailer coaches.

12.29 DC EMU stock is at present manufactured at the ICF and also at Jessops. The annual capacity of ICF is 640 units of coaches of all types including EMUs. Orders have been issued for increasing the capacity by 110 coaches raising it to 750 annually. Jessops have manufactured 334 units of coaching stock including EMUs in 1969-70. They have indicated that they would be able to increase their production substantially by re-organisation which they have affected in their workshops.

12.30 The question as to whether additional sources should be developed for supply of electrical equipment for DC EMUs has been considered by the Railways. M/s. N.G.E.F., Bangalore, had indicated interest in developing the manufacture of such equipment in their works provided they were assured of a continuing load. It was, however, felt by the Railways that the requirement of DC EMU stock for the Central and Western Railways would not be sufficiently large to justify development of such capacity at the N.G.E.F., Bangalore.

12.31 The Working Group recommends that steps should be taken to find out ways and means for meeting the demand of the Central and Western Railways for DC EMU stock. Efforts should be made to further increase the annual capacity of I.C.F. which is a public sector undertaking.

12.32 The Group also recommends that the total foreign exchange required for the import of spare parts for the repairs and rehabilitation of old EMU stock should be released expeditiously.

12 Coach Trains

12.33 The Metropolitan Transport Team had recommended the running of 12 coach trains instead of 9 coach trains as at present. According to the Team this would enable the Railways to carry 33 per cent more traffic during the peak period. The Working Group has been given to understand by the Railways that the running of 12 coach trains would cost on a rough estimate about Rs. 20 crores (Rs. 12 crores for rolling stock and 8 crores for works), on the Central Railway alone. It is presumed that on the Western Railway also, the cost would be more or less the same. Thus, the proposal of running 12 coach trains would cost about Rs. 40 crores and take about 5 years for implementation. The Working Group suggests that before a decision on this project is taken, a techno-economic study should be undertaken by the Railways.

Flooding of Tracks

12.34 During monsoon, dislocation of suburban services in Bombay is caused due to flooding of tracks. The Working Group recommends that the Railways should provide adequate drainage outlets for such sections of the tracks which are liable to flooding. Cooperation of the Municipal Body will have to be sought in this regard where new development is permitted on either side of the railway track.

Foot Over-bridges

12.35 Trespassing of the tracks is a menace to the smooth running of trains. A large number of trespassers are run over and killed. In Calcutta alone the number of trespassers killed in 1968 was about 600. It is recommended that immediate steps should be taken to provide foot over-bridges where colonies have sprung up on either side of the track or where the industrial areas have developed. At present the entire cost of the foot over-bridges is being met by the Municipal bodies. The Working Group is of the view that such over-bridges should be financed on the same pattern as the replacement of level crossings by grade-separated arrangements.

Law and Order

12.36 The problems created by law and order situation affect the maintenance of coaching and goods stock, besides affecting the punctuality of suburban services. Bootleggers and other unsocial elements interfere with the proper running of trains. Besides, there are innumerable thefts of track materials and

signalling equipment which cause dislocation in services and heavy losses to the Railways. Measures should be taken to check lawlessness by better coordination between the Railway Police, the State Police and the Railway Protection Force.

Level Crossings

12.37 The level crossings cause great inconvenience to the road traffic as these are closed for most part of the day. Trains have to be halted at level crossing signals, causing disruption in the tight schedule of trains during peak hours. The Working Group recommends that all the important level crossings within the urban limits should be replaced by grade-separated arrangements on priority basis. According to the revised formula which has been brought into force with effect from January, 1969, the cost of construction of an over/under bridge is shared by the Railways and the local bodies as under:

- (i) The Railway will bear 50 per cent of the total cost of the over/under bridge, including approaches. The total cost referred to above would include the cost of diversion of road, sewers, cables, gas and water mains etc. but would exclude the cost of acquisition of any land, and structures thereon, required for approaches or diversions.
- (ii) The Road Authority will bear 50 per cent of the total cost of over/under bridge including approaches etc. as referred to above and the cost of acquisition of any land required for approaches and diversions and structures thereon.
- (iii) The bridge will generally be of 24 ft. width equal to two lanes of road traffic. In areas within or close to cities and towns two footpaths (each 6 ft. wide) will also be provided if required by the Road Authority.
- (iv) If provision is required to be made in the bridge structure for crossing additional railway tracks in future, the cost of such extra length of the bridge structure will be borne by the Railway in addition to its share of the cost for the rest of the bridge and approaches.
- (v) If additional width of roadway is required by the Road Authority over and above the limits of the widths specified in (iii) above the cost of this additional width will be borne—
 - (a) fully by the Road authority for the length of the bridge required to span the existing tracks.

- (b) equally by the road and railway authorities for any extra length provided for crossing additional railway tracks in future.

12.38 The Group took note of the fact that the arrangements for sharing of cost have been liberalised to some extent in favour of the road authorities only last year. It will, however, be seen that Railways do not accept liability for the grade-separated arrangements over and above 24 ft.—the width equal to two lanes of traffic and 12 ft. for two foot-paths. To cater to the needs of future traffic in the metropolitan cities and in conformity with the width of the approach roads, the width of the over/under bridges has generally to be 60 ft. inclusive of foot paths. The cost of replacement of level crossings of such width would be quite substantial. The local bodies with their meagre finances would find it too difficult to divert funds for meeting their share of the cost. The Working Group therefore, recommends that the Railways may consider sharing the cost equally with the local bodies for the construction of over/under bridge, including approaches, upto the width of 60 ft. instead of 36 ft. as at present.





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CHAPTER XIII

CONCLUSION

THE review of operation and activities of the transport undertakings in the four metropolitan cities against the background of existing conditions and future needs as discussed in the earlier chapters, bring forth the following main problems faced by the city transport undertakings:

- (i) Non-availability of large capacity vehicles, particularly integrated double deckers;
- (ii) Backlog of unroadworthy vehicles which is mainly due to the non-availability of imported spares on account of foreign exchange difficulties;
- (iii) Necessity of running a large number of uneconomic routes on more or less inflexible fare structure because of public pressure;
- (iv) Low speed due to heavy congestion on roads which results in increased cost of operation;
- (v) Increasing shortfall between revenue and operating expenditure due to *inter alia* a high incidence of taxation, increase in wages, rise in cost of spares and components, and increase in rate of interest on capital; and
- (vi) Inability to carry out expansion-cum-replacement programme due to financial difficulties.

13.2 The Working Group has dealt with the immediate and pressing problems being faced by the Undertakings and suggested certain measures which are vital for an efficient system of public transport. We have recommended that the undertakings should introduce large capacity buses suitable for city operation. They should standardise the design of buses to make production more economical. At present capital cost of the transport vehicles is very high which is partly on account of Government leaves. The total tax element in the price of a commercial vehicle is estimated to be 48* per cent of the ex-factory price. It would be desirable to impose a ceiling on future increase in taxes on public buses plying in metropolitan cities.

* Report of the Road Transport Taxation Enquiry Committee, November, 1967.

13.3 One of the main problems which is being faced by the undertakings is that of over-aged buses which constitute 17.4 per cent of the total fleet in the case of BEST, 39.3 per cent in the case of DTU, and 47.3 per cent in the case of CSTC. In view of their financial difficulties, the undertakings could not replace overage and uneconomic-to-repair buses in the past. The Working Group has, therefore, suggested immediate financial support to enable them to replace over-age buses and augment their fleet in order to meet the increasing demand for transport facilities in the four cities. The capital requirements for the period 1970-71 to 1973-74 have been indicated in Chapter VII of the Report.

13.4 We have recommended changes in the organisational and financial structure of the undertakings (recognising their value to the community as a whole) by converting these undertakings (excluding Calcutta which is already a Corporation) into statutory bodies under Road Transport Corporation Act, 1950 with share capital base. We have recommended that Central and State Governments' capital contribution to the City Transport Corporations should be in the ratio of 1 : 2 as in case of State Road Transport Corporations. The share of the Central Government should be given through the Ministry of Shipping and Transport. As regards outstanding loans advanced to the undertakings by various authorities, we have suggested that these should be treated as share capital contribution and should not carry interest. The Working Group has also stressed the need for larger delegation of authority to the General Managers.

13.5 We have envisaged that for securing efficiency and sound management the undertakings should cover at least the operating expenses. This could be possible through rationalisation of fare structure; conversion of existing loans by Governments into share capital contribution; reduced traffic congestion by removal of existing bottlenecks and streamlining traffic management measures; by taking measures to optimise operating efficiency as listed in Chapter X of the Report; and plugging leakage in revenue by strict vigilance on the part of management. Priority should be given to explore possibility of staggering working hours for Government offices as well as educational institutions and commercial establishments on statutory basis if necessary, to spread peak hour demand.

13.6 As regards Tramways, we have agreed with the recommendations of the Tramways Inquiry Commission (1968) that in order to meet Calcutta city's transport requirements the Tramways will have to be continued for at least a decade. For

improving their operational efficiency, the Working Group has recommended an additional provision for the Fourth Plan to meet the cost of maintenance of tracks, rolling stock, overhead installations etc. The Working Group has also drawn up a time bound programme for implementation of certain urgent schemes during 1970-72.

13.7 For the improvement of the existing suburban train services, the Working Group has recommended various measures, such as replacement and augmentation of EMU stock increase in production capacity of DC EMU coaches, provision of adequate drainage facilities for tracks liable to flooding, sharing of cost of foot over-bridges by the Railways on the pattern of replacement of level crossings, better coordination between the Railways and State Police to check lawlessness, and further liberalisation of arrangements for sharing of cost in the case of replacement of level crossings by over/under bridges.

13.8 Finally the Working Group is convinced that a radical rationalisation of pattern of mass transportation services is necessary in order to bring about a network of efficient and modern public transport system in the metropolitan cities. The Rapid Transit Systems in the four cities should ultimately provide an effective answer to the growing problems of commuters as the existing road capacity to take extra traffic has reached its saturation limits. As the Prime Minister in her Preface to the Fourth Five Year Plan has observed "Transport and Housing Problems in urban regions will receive more attention", a specific provision of Rs. 50 crores has been made in the Plan for implementation of urgent rail schemes, such as provision of Suburban Dispersal Line in Calcutta and Third Terminal in Ballard Estate in Bombay and for detailed feasibility studies for Rapid Transit Systems in the four metropolitan cities. The Working Group hopes that these schemes will be implemented early.



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SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS

CHAPTER I—METROPOLITAN GROWTH & TRANSPORTATION PROBLEMS

TRAFFIC studies conducted in the metropolitan cities indicate that between 45 to 50 per cent of the total daily passenger trips are performed during the peak hours of the day, about 60 to 70 per cent of which are for journey to work and back. Such acute 'peak' traffic conditions are caused by the concentration of large employment centres improperly located in relation to residential areas, coupled with increasing distances between work places and dwellings. (Paras 1.5 and 1.6)

2. During the peak hours, the suburban trains in Bombay are packed to 'crush load'. The location of the suburban terminals, particularly in Calcutta and Bombay is such that the majority of the detraining passengers at the terminals have to depend on road transport for completing their journey to destination in the central area of the city, with the result that an additional burden is imposed on road traffic. (Para 1.9)

3. The road transport undertakings in metropolitan cities have not been able to cope with the increasing volume of passengers for providing comfortable and convenient travel at time and places of major demand because they could not augment their capacities. Moreover, the existing fleet consists of a large number of overage and uneconomic-to-repair buses. (Para 1.10)

CHAPTER II—CALCUTTA STATE TRANSPORT CORPORATION

4. To meet the city's growing demand for transport services, the CSTC had increased its fleet to 1093 (as on March 31, 1970), from its initial fleet of 670. In spite of the large increase in fleet, the number of effective buses on road on an average was 561 during 1969-70. This was mainly due to a number of overage buses in the fleet and frequent breakdowns. (Para 2.1)

5. Out of the total fleet of 1093 buses about 72.3 per cent buses were over 5 years old and 47.3 per cent buses were over 10 years old. The overage fleet is a very serious problem for the CSTC. (Para 2.8)

6. The Corporation has been facing serious difficulties in procuring imported spare parts so essential for overhauling and maintenance of heavy duty buses. The number of buses held up in the workshop for want of imported spares was 298 as on 31st March, 1970. Due to limited fleet strength the Corporation has been obliged to put such buses on the road resulting in frequent breakdowns, interruption in service schedules and increased cost of operation. (Para 2.10)

7. The CSTC has been running at a loss since 1962-63 and the gap between the income and expenditure is widening every year. The loss incurred by the CSTC during 1969-70 was Rs. 355 lakhs. The present position is such that the Corporation cannot even meet its operational cost, not to speak of payment of interest on the capital or contribution to the depreciation fund. (Para 2.11)

CHAPTER III—BOMBAY ELECTRIC SUPPLY AND TRANSPORT UNDERTAKING

8. Out of the BEST fleet of 1307 buses as on 31st March, 1970, 45.1 per cent (589) buses were over 5 years old and 17.4 per cent (228) buses over 10 years old and 3 per cent (39) over 15 years old. The overage fleet is one of the serious problems for the Undertaking. (Para 3.8)

9. The Undertaking has at present only one major workshop at Kingsway which was originally designed in 1948 to cater to the needs of 1000 buses only. The present Workshop facilities are inadequate to meet the needs of efficient maintenance and heavy repairs. In view of the increasing operational area, it may be necessary to examine the strengthening/decentralisation of its workshop facilities. (Para 3.10)

10. Out of the 119 bus routes operated by the BEST Undertaking, over 74 routes fail to cover the operational costs due to low occupation ratio. It is hoped that the management will be able to introduce the desired re-routing plan shortly which will meet the requirements. (Para 3.11)

11. At present, there are three major bus stations in the city viz., at Colaba, Sion and Mahim and two in the suburbs viz., at Mulund and Juhu. At least two more bus stations would require to be constructed in the city preferably, at Museum and Kings Circle. (Para 3.12)

12. The financial position of the BEST has been steadily deteriorating since 1963-64. The losses have increased from Rs. 43.9 lakhs in 1963-64 to Rs. 155.1 lakhs in 1969-70.

(Para 3.14)

CHAPTER IV—DELHI TRANSPORT UNDERTAKING

13. The overage fleet is one of the serious problems for the DTU. Out of a fleet of 1193 as on 31st March, 1970, 679 buses (i.e. 56.9 per cent) were over 5 years old, 469 buses (i.e. 39.3 per cent) were over 8 years old and 290 (i.e. 24.3 per cent) buses over 10 years old.

(Para 4.9)

14. On the basis of generally accepted yardstick of eight years life of a single deck bus, the DTU needs to replace 469 buses immediately. Another 210 buses (over 8 years) will become due for replacement by March 1973. The DTU would, therefore, need 679 buses in all to be replaced during the Fourth Plan.

(Para 4.10)

15. For economic operation and efficient working a depot should be medium-sized with a stabling capacity of 100 to 125 buses. The DTU therefore, needs at least 2 additional depots and 4 sub-depots, suitably located for garaging and maintenance facilities in order to reduce dead kilometrage to the minimum.

(Para 4.11)

16. To cope with the increased workload of maintenance and heavy repairs of the anticipated large number of buses and in view of the large operational area, it will be necessary for the DTU to decentralise its workshop facilities.

(Para 4.12)

17. The DTU has been experiencing difficulties in getting spare parts in time. At present the bulk supply of the spares are being obtained directly from the manufacturers who do not have their sales depots at Delhi. M/s Ashok Leyland & TELCO have since agreed to open their sales depots at Delhi. This would not only be economical to the Undertaking but also reduce the procurement lead time.

(Para 4.13)

18. Almost all the routes operated by the DTU fail to cover even operational costs. Taking into consideration the traffic pattern and with a view to making them economically viable and improving efficiency, it is necessary for the undertaking to reorganise its routes on scientific basis.

(Para 4.14)

19. The Undertaking has been incurring losses since 1963-64. During 1969-70 the losses were estimated to be Rs. 242.35 lakhs. Due to its difficult financial position, the Undertaking has not been able to repay any of the loan instalments and interest charges thereon to the Central Government since 1st October, 1965. (Paras 4.15 and 4.16)

CHAPTER V—MADRAS CITY TRANSPORT SERVICES

20. During the peak hours there is overcrowding in the buses. While the capacity of a bus is 61 passengers it carries about 90 passengers during peak period. To meet peak hour rush the Department needs large carrying capacity buses.

(Para 5.4)

21. Out of the fleet of 1022 as on 31-3-1970, only 11.7 per cent (120) buses were 5 years old and 2.9 per cent (30) buses were over 8 years old. Thus overage fleet is not much of a problem in Madras city as the Tamil Nadu State Transport Department has been following a policy of timely replacement of its overage fleet, which is 6 years or 3.5 lakhs kms. in case of Leyland Comet and 5 years or 2.75 lakhs kms. in case of TMB buses.

(Para 5.7)

CHAPTER VI—DESIGN AND AVAILABILITY OF BUSES

22. To meet the peak hour demand the city transport undertakings should introduce large capacity buses, preferably double deckers.

(Para 6.2)

23. Taking into account the production programme of the manufacturers it is recommended that the requirements of the bus chassis for city transport may be standardised to the following three categories:

1. Cometised Titan Double Deck Chassis.
2. Semi-articulated vehicle with a Leyland Comet Tractor and a suitable trailer Chassis to mount a single or double deck bogie.
3. Leyland Comet A1-COP-311 passenger chassis with a wheel base of 210", or TMB chassis LP-1210/52 with a wheel base of 205"

(Para 6.6)

24. The Working Group is also of the view that in case any manufacturer is able to develop chassis conforming to the above

requirements, these can also be considered for purposes of standardisation for use in city operation. (Para 6.7)

25. The fleet in Calcutta and Bombay mostly consists of imported double deckers and heavy duty single deckers. It would be economical to bring back to road some of the old imported buses through reconditioning. The Working Group recommends that the Ministry of Industrial Development should allot an *ad hoc* foreign exchange to the extent of Rs. 17.80 lakhs to the CSTC to bring back 150 double deckers into service. As regards the BEST, the requirement of foreign exchange for procuring imported spares is Rs. 30 lakhs for reconditioning of 200 old imported buses. (Paras 6.8, 6.9 and 6.10)

26. Till 1967-68 the basis for allocation of foreign exchange for imported spares was Rs. 1000 per bus per annum. It has recently been reduced to Rs. 600. This amount is just adequate for meeting the needs of the Indian made medium duty vehicles. Treating imported buses on the same footing as the buses manufactured in India is not justified. The Working Group, therefore, recommends that the allotment for existing heavy duty buses which were imported from U.K. should be at least Rs. 2500 per year. The double deckers manufactured in India should also be treated at par with the imported buses. It is recommended that the Ministry of Industrial Development may adopt the above basis for allocation of foreign exchange for imported spares and also ensure clearance of licences expeditiously.

(Paras 6.12 and 6.13)

CHAPTER VII—FINANCIAL REQUIREMENTS OF THE UNDERTAKINGS

27. In view of the difficult financial position of the city transport undertakings and to render satisfactory service to the travelling public the Working Group recommends that necessary financial arrangements should be made for replacement of overage buses and also reasonable augmentation of their fleet. The requirements of the CSTC during the remaining period of the Fourth Five Year Plan are Rs. 5 crores and for the BEST and DTU Rs. 12 crores each. The balance plan outlay for 1970-74 for DTU is Rs. 8.4 crores. The DTU would, therefore, need additional provision of Rs. 3.6 crores during the Fourth Plan. The Madras City Transport Service needs Rs. 2.4 crores over and above the cost of replacement programme to be met out of depreciation fund already provided by the Department. (Para 7.3)

28. The provision for the current year for the Calcutta State Transport Corporation should be augmented by Rs. 60 lakhs and that for the DTU by Rs. 1 crore. (Para 7.3)

CHAPTER VIII—PATTERN OF TAXATION OF PASSENGER ROAD TRANSPORT SERVICES

29. Passenger road transport services in cities are subject to direct and indirect taxes. During 1969-70 the percentage share of direct taxes in the total expenditure was 11.9 in the case of Madras City and Suburban Services as compared with 3.6 for DTU, 7.1 for BEST and 3.3 for CSTC. **(Para 8.9)**

30. The percentage share of indirect taxes levied by the Central and State Governments in the total expenditure per vehicle in 1969-70 amounted to 25.7 for DTU, 21.3 in case of BEST and 25.4 for Madras City and Suburban Services. **(Para 8.12)**

31. It is recommended that the principle of lower rates of taxes for city services should be accepted by the Central and all State Governments concerned in view of the difficult financial position of the city transport undertakings. **(Para 8.17)**

32. It is further recommended that the rates of taxes levied by the Governments on passenger vehicles plying in metropolitan areas should not be raised further. **(Para 8.17)**

CHAPTER IX—ORGANISATIONAL AND FINANCIAL STRUCTURE

33. The present organisational structure of the BEST and the DTU is not a satisfactory arrangement for efficient running of the undertaking. It is recommended that the present organisational set up should be replaced by a Statutory Corporation. This would be in keeping with the general policy of the Government of India that passenger road transport services should be run through corporations. **(Para 9.4)**

34. The Board of Directors of the Corporation should be appointed strictly on the basis of skills and experience useful to a transport undertaking and should be capable of reviewing operations and recommending improvements. **(Para 9.4)**

35. The Chief Executive should be a person responsible for management of the Corporation at the top level and he should be a member of the Board of Directors. **(Para 9.5)**

36. The Working Group recommends that there should be larger delegation of powers for the Chief Executive and other managerial staff so as to ensure optimum performance. Even

pending the formation of Corporation, it is necessary to delegate more powers to the General Managers of the Undertakings.

(Para 9.6)

37. There have been more than five changes in the post of General Manager of the DTU during the last 12 years, although under the Delhi Municipal Corporation Act the tenure of a General Manager is normally for five years. In Madras too, no Director continued in his post for more than a year during the last three years. The Working Group strongly urges upon the concerned authorities that frequent changes in top management personnel should be avoided.

(Para 9.7)

38. The Working Group recommends that each transport undertaking should set up a Planning Group of competent people undertake necessary studies to improve the efficiency of the service. This Group should assist the General Manager in Planning improvement of the projects and should report to him regularly.

(Para 9.8)

39. The transport undertaking also needs a special group to make cost studies with a view to achieving economies in all departments. It would be of advantage to have costing personnel in the various depots so that performance of a depot or maintenance/operations unit could be compared with one another.

(Para 9.9)

40. It is recommended that capital contribution to the city transport undertakings should be in the form of share capital. At present the Central and State Governments contribution to the capital of State Road Transport Corporations through the Railway Board is in the ratio of 1 : 2. The same ratio can be adopted in the case of city undertakings if they are converted into Corporations and contributions by the Central Government made through the Ministry of Shipping and Transport. A beginning in this regard can be made with Calcutta where a Corporation is already running the city road transport services.

(Para 9.12)

41. The loans so far advanced to the Undertakings should be treated as share capital contribution and should not carry interest.

(Para 9.13)

42. The Working Group feels that the Undertakings should at least cover the operating expenses.

(Para 9.14)

43. The Working Group recommends that the undertakings should have freedom to determine their fares to meet at least the increases in the operating expenses which may be beyond their control. (Para 9.15)

CHAPTER X—OPERATIONAL EFFICIENCY MEASURES

44. It is suggested that measures, such as scientific Inventory Management, rationalisation and streamlining of purchase procedure, proper quality control and inspection of the materials purchased, route planning on scientific basis, adequate workshop and depot facilities, should be adopted by the undertakings to improve their operational efficiency. (Para 10.1)

45. The Undertaking should reduce leakage in revenue with greater alertness on the part of the supervisory staff. Arrangements for advance booking should be intensified on the routes on which passenger load is high. (Para 10.1)

46. It is recommended that the highest priority should be given to replacement of level crossings by overbridges or subways. (Para 10.3)

47. Priority should be given to explore the possibility of further staggering working hours for Government offices as well as educational institutions and commercial establishments, if necessary on statutory basis. (Para 10.4)

48. The Working Group is of the view that the tendency towards urban concentration must be effectively restricted. The Working Group hopes that the Maharashtra Government would stop further reclamation of the Back Bay Area as the Railways and the BEST are much concerned with this development. (Para 10.5)

CHAPTER XI—TRAMWAYS

49. The number of trams held up for want of spares has been rising from year to year. The Tramways find it difficult to get import licence to procure some essential materials and components like traction motors, insulated copper wire, switches, rails, tyres etc. which are not manufactured in the country. (Para 11.8)

50. The derailment of trams had increased from 304 in 1963 to 2403 in 1969 due to heavy wear and tear of the tracks

as well as the inability of the Tramways to procure rolled steel tyres for a number of years. (Para 11.9)

51. The financial position of the Tramways has been deteriorating since 1967 and the loss incurred by the undertaking during 1969 amounted to Rs. 85.11 lakhs. (Para 11.12)

52. For improving the operational efficiency of the Tramways, it is recommended that an additional provision of Rs. 3 crores should be made during the Fourth Plan to meet the cost of maintenance of tracks, rolling stock, overhead installations etc. (Para 11.16)

53. The Heavy Electricals Ltd., Bhopal should be persuaded to take up the manufacture of traction motors required by the Tramways. (Para 11.17)

54. A sum of only Rs. 10 lakhs has been provided in the Annual Plan for 1970-71. It is recommended that the Plan provision for the current year should be suitably enhanced so as to make available Rs. 225.90 lakhs during the two years 1970-71 and 1971-72. (Para 11.18)

55. The Tramway Undertaking need special allotment of foreign exchange for imports of switch points, grooved rails, traction motors and circuit breakers amounting to Rs. 123.63 lakhs during 1970-72. It is recommended that *ad hoc* allocation of foreign exchange for the above amount should be made to the Undertaking to meet its requirements. (Para 11.19)

56. Increasing foreign exchange difficulties had forced the Tramways to use locally made soft cast steel tyres in place of rolled steel tyres. Since Railways had booked the entire rolling capacity of the TISCO, the supply of tyres to the Company through this source has ceased. It is, therefore, necessary that Railways should allow the TISCO to resume rolling of these tyres for the Undertaking. In case it is not feasible, the Working Group recommends that foreign exchange to the extent of Rs. 4 lakhs per annum for importing them should be allocated to the Undertaking. (Paras 11.20 and 11.21)

57. The Undertaking is unable to get grooved rails causing heavy financial loss and increased cost for renewal programme. The requirement of grooved rails will be of the order of about 1200 tonnes per annum for the next five years and thereafter 600 tonnes per annum for normal replacement. The Hindustan Steel Plant at Bhilai may be persuaded to take up this order. (Para 11.22)

58. The Tramways have to pay Rs. 4 lakhs per month for consumption of electricity. Under the provision of a Statute the Railways are exempted from payment of electricity duty. The Working Group suggests that the State Government should consider exempting the Tramway Undertaking from payment of electricity duty on the pattern of Railways. (Para 11.23)

59. The tariff structure for electricity supply is governed by successive agreements with Calcutta Electricity Supply Corporation. Under the agreement of 1950 the Undertaking has been given a flat rate and thus deprived of getting the advantage of summated maximum demand on the ground that it received supply through eleven sub-stations owned and operated by it. The Working Group is of the view that the Agreement with Calcutta Electricity Supply Corporation may be re-examined with a view to determining a reasonable tariff structure for the Tramways. (Para 11.24)

CHAPTER XII—SUBURBAN RAILWAY SERVICES

60. The Railways constitute the most expedient and effective means of mass transportation in the metropolitan areas. About 7.44 lakh commuters in Calcutta, 22 lakh in Bombay and 2.4 lakh in Madras are being carried daily by the suburban railways. (Para 12.1)

61. The Final Location Survey for the Suburban Dispersal Line in Calcutta is under progress and is scheduled to be completed by April, 1971 when the construction of the project could be taken in hand. The Planning Commission has already provided a sum of Rs. 30 crores in the Development Plan of the Railways during the Fourth Plan for the construction of the above line. It is recommended that the Survey should be completed as early as possible. (Para 12.22)

62. The Railways have already initiated the techno-economic feasibility studies for the mass rapid transit system in Calcutta. According to the Railways the studies are expected to be completed by December, 1971. It is recommended that all possible efforts should be made to complete these studies in time and commence construction on this Project as early as possible. (Para 12.23)

63. The preliminary engineering feasibility study for the third terminal at Ballard Estate (Bombay) which is already in progress is expected to be completed by December, 1970. The

Working Group is of the view that the construction of the new terminal if found feasible, would relieve congestion on the existing two terminals—V.T. and Churchgate. (Para 12.24)

64. The Traffic Cell set up by the Government of Maharashtra to undertake studies for preparing a long-term transportation plan for Bombay has submitted its report to the Metropolitan Transport Team. As soon as the corridors for the rapid transit are finalised, the Railways would be in a position to undertake the techno-economic feasibility studies for system selection. (Para 12.25)

65. The traffic and transportation studies for preparing long-term transportation plans for Madras and Delhi are under progress. It is expected that the reports will be available to the Metropolitan Transport Team by March, 1971. The Team would then finalise the corridors and give its report so as to enable the Railways to carry out the techno-economic feasibility studies for system selection for rapid transit system in Madras and Delhi. No time should be lost in finalising these studies. (Para 12.26)

66. Steps should be taken to find out ways and means for meeting the demand of the Western and the Central Railways for DC E.M.U. Stock. Efforts should be made to further increase annual capacity of I.C.F. for this purpose. Also total foreign exchange required for the purchase of spare parts for the repairs and rehabilitation of old EMU stock should be released expeditiously. (Paras 12.31 and 12.32)

67. The proposal of running 12 coach trains in Bombay is expected to cost on a rough estimate about Rs. 40 crores and take about 5 years for implementation. Before a decision on this Project is taken, a techno-economic study should be undertaken by the Railways. (Para 12.33)

68. During monsoon dislocation of suburban services in Bombay is caused due to flooding of tracks. The Railways should provide adequate drainage outlets for such sections of the tracks which are liable to flooding. (Para 12.34)

69. Trespassing of the tracks is a menace to the smooth running of trains. Immediate steps should be taken to provide foot overbridges where colonies have sprung up on either side of the track or where the industrial areas have developed. At present the entire cost of the foot over-bridges is being met by the Municipal bodies. The Working Group is of the view that such

over-bridges should be financed on the same pattern as the replacement of level crossings by grade-separated arrangements.

(Para 12.35)

70. There are innumerable thefts of track materials and signalling equipment which cause dislocation in services and heavy losses to the Railways. Measures should be taken to check lawlessness by better coordination between the Railway Police, the State Police and the Railway Protection Force.

(Para 12.36)

71. All the important level crossings within the metropolitan area should be replaced by grade-separated arrangements on priority basis. The Railways may consider sharing the cost equally with the local bodies for the construction of over/under bridge, including approaches, upto the width of 60 ft. instead of 36 ft. as at present.

(Para 12.38)

